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TRINITY RIVER BRIDGES PROJECT

Environmental Assessment/Draft Environmental Impact Report

Volume 2

Chapter 1,2,&3-(1-7)

May 5, 2003

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

TRINITY COUNTY

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TRINITY RIVER BRIDGES PROJECT

Environmental Assessment/Draft Environmental Impact Report

Volume 2 of 4

Chapter 1,2,&3-(1-7)

Project Applicant and Federal Lead Agency For NEPA
Trinity River Restoration Program
U.S. Department of the Interior – Bureau of Reelamation
P.O. Box 1300
1313 Main Street
Weaverville, CA 96093

Federal Co-Lead Agency For NEPA
U.S. Department of Interior – Bureau of Land Management
Redding Field Offiee
355 Hemsted Lane
Redding, CA 96001

California Lead Agency for CEQA
Trinity County
Planning Department – Natural Resouree Division
P.O. Box 156
Hayfork, CA 96041

Applicant's Consultant:
North State Resourees, Ine.
5000 Beehelli Lane, Suite 203
Redding, CA 96002

May 5, 2003

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CHAPTER 1

Introduction, Purpose and Need

Chapter 1

Introduction

1.1 Introduction

This Draft Environmental Assessment/Environmental Impact Report (Draft EA/EIR) for the Trinity River Bridges Project (Project) addresses the environmental issues, alternatives, and impacts associated with the modification and/or replacement of the Salt Flat, Bucktail, Poker Bar, and Biggers Road bridges on the Trinity River, below Lewiston Dam.

The U.S. Bureau of Reclamation (BOR), the U.S. Bureau of Land Management (BLM), and Trinity County (County) prepared this Draft EA/EIR. This document meets the legal requirements of the National Environmental Policy Act (NEPA) (42 United States Code [USC] Section 4321 et seq.) and the California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.). BOR will be responsible for the construction of the proposed project and will function as the federal lead agency under NEPA. BLM will serve as a federal co-lead agency since it will have approval authority for project activities on public lands under its administrative authority (i.e., Salt Flat and Bucktail sites). Trinity County will be providing funds made available through the California Department of Fish and Game's Coastal Salmon Recovery Program for the construction of the Salt Flat and Biggers Road bridges. This EIR/EA has been funded in part through the same program. The Coastal Salmon Recovery Program is intended to address key factors limiting salmon and steelhead restoration. It is funded with federal and state funds through the Pacific Salmon Recovery Program, and California Propositions 13 and 40, respectively. Because the County will be providing a portion of the funding to construct the project and will obtain certain associated regulatory project approvals, it will function as the state lead agency under CEQA. This document discloses relevant information to all interested parties and invites such parties to play a role in both the decision-making process and the implementation of that decision. This Draft EA/EIR also provides federal, state, and local decision-makers with detailed information concerning the significant environmental, social, economic, cultural, and other impacts associated with the alternative courses of action for the bridge replacement project.

The Record of Decision (ROD) for the Trinity River Mainstem Fishery Restoration Final Environmental Impact Statement/Environmental Impact Report (FEIS/EIR) dated December 19, 2000, directed the Department of Interior (DOI) agencies to implement the Preferred Alternative identified in the FEIS/EIR. In addition to the Flow Evaluation Alternative, elements of the Mechanical Restoration Alternative were included in this decision (U.S. Fish and Wildlife Service [USFWS] et al. 2000). The ROD set forth prescribed Trinity River flows for five different water-year types: extremely wet (815,200 acre feet annually [afa]; wet (701,000 afa); normal (646,900 afa); dry (452,600 afa); and critically dry (368,600 afa). In orders issued in April and September 2001, Judge Oliver Wanger of the United States District Court for the Eastern District of California enjoined additional flows beyond those necessary under the ROD for a critically dry year pending completion of a Supplemental Environmental Impact Statement (SEIS) for the December 2000 "Flow Decision." However, the court expressly authorized and directed the DOI to proceed with non-flow aspects of the December 2000 Flow Decision, including, presumably, actions necessary to raise Trinity

River bridges to accommodate the higher flows that may occur once the SEIS is complete and a new ROD has been approved. Implicit in Judge Wanger's decision was the notion that the NEPA portion of the FEIS/EIR remained available as a first tier or programmatic document that could be used as baseline data for second tier-level NEPA documents. These federal court decisions did not constitute a final ruling on the merits of the lawsuit challenging the ROD and FEIS, but rather were issued in response to requests for interim injunctive relief, pending a final resolution on the merits.

The Trinity County Board of Supervisors opted not to "certify" the EIR portion of the joint NEPA/CEQA document based on Judge Wanger's decision requiring supplemental analyses to achieve full NEPA compliance for the Flow Decision. "Tiering" is therefore not available for the EIR portion of the EA/EIR for the Project. The EIR portion of this document, then, will function as a stand-alone document, and is in no way dependent for its legal adequacy – for CEQA purposes only – on the Flow Decision FEIS/EIR.

On December 9, 2002, Judge Oliver W. Wanger of the United States District Court for the Eastern District of California issued a "Memorandum Decision" (**Appendix A**). This decision, which relates to the merits of the FEIS challenge rather than interim requests for injunctive relief, addressed what he found to be legal deficiencies with the December 19, 2000 ROD issued by former Secretary of Interior Bruce Babbitt. These defects related both to the FEIS and to the related biological opinions issued by the National Marine Fisheries Service (NMFS) and the USFWS. Because of the defects related to the FEIS, the court commanded the preparation of a Supplemental EIS, which was to be completed within 120 days of issuance of the Memorandum Decision (i.e., by April 10, 2003). The court also set forth a flow regime that was to remain in effect while the process of completing an SEIS was underway. As set forth on pages 136, 137, and 143 of the Memorandum Decision, Secretary Babbitt's ROD would govern flow levels for both critically dry (368,600 afa) and dry years (452,600 afa), with the latter figure operating as a cap for controlled flows even in normal, wet, and extremely wet years. The ROD had provided for 646,900 afa in normal years, 701,000 in wet years, and 815,200 in extremely wet years. Like the court's earlier, interim decision, the 2002 Memorandum Decision states that "[a]ll non-flow measures prescribed by the ROD shall proceed."

On February 24, 2003, Judge Wanger heard argument in connection with his final judgment in the case. At the end of this hearing, he extended the deadline for completing the SEIS from April 10, 2003, to July 9, 2004. In all other respects, however, his reasoning tracked the December 9, 2002, Memorandum Decision. For example, the final judgment states that "nothing in this judgment is intended to delay or to affect implementation of any other fishery restoration measure identified in the ROD." The referenced measures presumably include the actions necessary to raise Trinity River bridges to accommodate the higher flows that may occur once the SEIS is complete and a new ROD has been approved.

Because it is unclear which flows will be authorized upon completion of an SEIS and new ROD, the flows authorized by Judge Wanger are deemed to constitute the "existing [hydrological] environment" for CEQA purposes, and are considered to be part of both the No Project Alternative (for CEQA) and the No-Action Alternative (for NEPA). These assumptions are considered conservative, and thus are consistent with standard methodologies for environmental impact assessment.

Copies of all of the above-referenced court documents, as well as the December 19, 2000 ROD, and the documents that, taken together, constitute the FEIS/EIR, are available for public review at:

The Trinity River Restoration Program Office
United States Department of Interior – Bureau of Reclamation
PO Box 1300
1313 South Main Street
Weaverville, California 96093

The decision to prepare a stand-alone EIR in the absence of a certified EIR for the Flow Decision is consistent with CEQA Guidelines. Because Judge Wanger has given the BOR and other federal agencies permission to proceed with the Project, the County considers that there is a viable need for the Project based on this federal policy standpoint and the County's responsibility to protect public health and safety. The County's role in facilitating the Project is to ensure that local permitting requirements are satisfied, and to ensure that the EIR portion of the NEPA/CEQA document is legally adequate for use by the County and the responsible agencies that require CEQA compliance. Notably, the County does not have the power or authority to make or alter the Trinity ROD; and its decision to facilitate bridge replacements to accommodate federal agencies acting pursuant to the December 2000 ROD and a federal court order does not constitute "CEQA clearance" for all aspects of the ROD.

In any event, the proposed improvements each have "independent utility" and are not dependent on future ROD flows for their justification. Such justification will exist even if, for whatever reason, the new ROD does not prescribe flows as great as those authorized in December 2000, or even if a new ROD leaves the existing flow regime in place. The Project, for example, will improve BOR's flexibility in dealing with major storm events creating possible flood control problems, and thus will help protect the citizens of Trinity County from possible flooding dangers. Currently, water cannot be released from Lewiston Dam at a rate greater than 6,000 cubic feet per second (cfs) without the potential to adversely affect a number of private properties and improvements in the downstream floodplain. If the four bridges are replaced or modified (along with some other floodplain improvements) in a manner that will allow increased flows, BOR will be more easily able to direct releases from Lewiston Reservoir at higher levels when such a need arises. Such increased releases could create additional storage capacity within Lewiston Reservoir and Trinity Lake needed to capture large volumes of water rapidly traveling downstream from areas above the reservoirs during storm events. This could facilitate safer operations of Trinity and Lewiston Dams while limiting adverse downstream impacts. BOR would also enjoy increased flexibility in situations in which it is not clear whether increased releases from storage are necessary to provide storage capacity from rising water volumes. If a large storm, which at first seemed destined to require emergency releases, ultimately dissipates and thus does not require as much reservoir storage capacity as initially feared, BOR, by delaying the moment of decision in determining how much water to release, could be able to store more water in the reservoirs than otherwise might have been possible. This ability to await more information about the nature and extent of storms before increasing dam releases could have the effect of preserving reservoir water for delivery to Central Valley Project (CVP) customers and other uses.

1.2 Project History and Background

Completion of the Trinity and Lewiston Dams in 1964 blocked migratory fish access to habitat in the Upper Trinity River, eliminated sediment transport from over 700 square miles of the upper watershed, and restricted anadromous fish populations to remaining habitat below Lewiston Dam. Trans-basin diversions from Lewiston Reservoir to the Sacramento River altered the hydrologic regime of the upper Trinity River resulting in riparian encroachment and fossilization of point bars from Lewiston to near the North Fork Trinity River. Encroachment of riparian vegetation into the former active channel promoted the deposition of fine-textured sediments, resulting in linear berms that

further confined and simplified the channel, reduced riparian age class and species diversity, impaired floodplain access, and adversely impacted fish habitat.

In 1981, in response to these adverse impacts to fish habitat and subsequent declines in salmon runs, the Secretary of Interior directed the USFWS to initiate a 12-year flow study to determine the effectiveness of flow restoration and other mitigation measures for impacts of the Trinity River Diversion (TRD). Then, in 1984, Congress enacted the Trinity River Fish and Wildlife Program to further promote and support management and fishery restoration actions in the basin. Under this program, nine pilot bank rehabilitation projects between River Mile (RM) 101 and River Mile 111 were implemented between 1991 and 1993, among other actions.

In 1992 Congress enacted the Central Valley Project Improvement Act (CVPIA). One purpose of the CVPIA was to protect, restore, and enhance fish, wildlife, and associated habitats in the Trinity River Basin. The act also directed the Secretary to finish the Trinity River Flow Evaluation Study (TRFES) and to develop recommendations "regarding permanent instream fishery flow requirements, Trinity River Division operating criteria, and procedures for the restoration and maintenance of the Trinity River fishery." The Trinity River Flow Evaluation Final Report was ultimately published in 1999 by the USFWS and the Hoopa Valley Tribe (HVT), providing a framework for restoration activities below Lewiston Dam.

In 1994, the USFWS (NEPA lead agency) and Trinity County (CEQA lead agency) began the public process of developing the Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Trinity River Mainstem Fishery Restoration Program. The FEIS, published in October 2000, functions as a project-level FEIS (a NEPA document) for policy decisions associated with managing Trinity River flows, and functions as a programmatic NEPA document providing first-tier review of other potential actions, including the replacement of the four bridges identified in Section 1.1. As noted in Section 1.1, however, the Trinity County Board of Supervisors (Board of Supervisors) has never certified the EIR portion of the joint federal/state document. Thus, there is no "first tier" CEQA document that can be used for the bridge projects. For this reason, the EIR is intended to function as a complete, stand-alone CEQA document not dependent on any prior CEQA document for addressing impacts that must be analyzed under CEQA.

The FEIS identified four bridges that were susceptible to impacts associated with floods and peak flow levels prescribed by the ROD for fish habitat improvements. Adverse impacts to these bridges by flood flows, including overtopping, flooded approaches, and scouring, have occurred as recently as 1997. In the 1997 New Years Day flood, these bridges and/or their approaches were rendered inaccessible by flood flows that severely limited residential and commercial use of these facilities for several days.

The proposed bridge replacement project is one part of a larger effort to restore the anadromous fishery of the Trinity River as described in the Secretary of the Interior's 2000 Trinity River ROD. Although the flow schedule prescribed by the ROD is subject to a Court-mandated review (pending completion of a SEIS/EIR), the proposed bridge replacements have been ordered to proceed. As they exist, the four bridges have varying ability to accommodate the 100-year storm event or flow releases from Lewiston dam greater than 6,000 cfs (combined with tributary inflows) without sustaining damage and/or creating a hazardous situation for users. If implemented, the proposed project could reduce the existing likelihood of flooding of the four bridges and/or their access roads, and the potential loss of property and lives.

Currently, a supplemental Trinity River Mainstem Fishery Restoration EIS/EIR is being written to comply with decisions issued by federal Eastern District Court Judge Oliver Wanger (United States District Court, Eastern District of California: CIV-F-00-7124 OWW DLB), as discussed in Section 1.1 above. The original four lead agencies, USFWS, BOR, HVT, and Trinity County (CEQA Lead), are preparing this document. As is also explained in Section 1.1, the new SEIS must be completed, according to Judge Wanger, by no later than July 9, 2004. The lead agencies intend to complete the CEQA portion of that joint document by the same date, though the federal court order does not command such a result.

Implementation of other restoration projects in the Trinity River is currently being evaluated by the Trinity River Restoration Program (TRRP) Office. Proposed projects include spawning gravel supplementation, mechanical channel projects, and watershed improvement projects. Since these projects may occur simultaneously, the lead agencies and other involved parties in the SEIS are making a concerted effort to assure that the models, data, assumptions, and analyses are fully coordinated.

Numerous watershed restoration projects are being planned and implemented throughout the Trinity River Basin. The Trinity County Resource Conservation District (TCRCD), the BLM and the Shasta-Trinity National Forest, with funding provided by the California Department of Fish and Game's Coastal Salmon Recovery Program, the State Water Resources Control Board (SWRCB), the U.S. Department of Agriculture, the BLM's Jobs in the Wood Program, and the National Fish and Wildlife Foundation are implementing numerous upslope watershed restoration projects throughout the Basin, including the South Fork Trinity River watershed. The County, with grant funding provided by the California Department of Fish and Game (CDFG) and the SWRCB, has inventoried all county road crossings on fish-bearing streams in the Trinity River Basin and is currently implementing the highest ranked migration barrier removal projects. The County has also completed a sediment source inventory on county roads, prioritizing and implementing projects based on high-priority treatment sites on county roads. The BLM is conducting a similar road inventory of its roads in the Trinity River watershed. It is anticipated that numerous restoration projects will occur based on these inventories. Plan development and environmental review is ongoing for several projects. NEPA and CEQA review is being provided on a project-by-project basis by the appropriate agencies. State, regional, or local entities could be a CEQA lead agency for those projects. In general, either the Shasta-Trinity National Forest or the Six Rivers National Forest acts as the NEPA lead agency for projects on National Forest lands. BLM will act as NEPA lead agency for projects on BLM lands.

1.3 Type of Environmental Document

This document is designed to comply with both NEPA and CEQA. The NEPA and CEQA laws require that governmental agencies evaluate the environmental impacts of their proposed decisions before making formal commitments to carry them out and that such detailed evaluation be done with public involvement. NEPA is a federal law that applies to federal agencies, whereas CEQA is a California law that applies to state and local agencies. For this project, NEPA requires preparation of an EA, and CEQA requires preparation of an EIR. By preparing a single document that complies with both statutes, the involved agencies have been able to avoid unnecessary duplication of effort.

The *CEQA Guidelines* identify several types of EIRs, each applicable to different project circumstances. This EIR has been prepared to function as a Project EIR, pursuant to Public Resources Code Section 21156. A Project EIR evaluates the environmental impacts of a specific project (*CEQA Guidelines*, Section 15161). This type of EIR focuses primarily on the changes in the environment that would occur because of project implementation and

evaluates all phases of a particular project (i.e., planning, construction, and operation). For the reasons set forth in the "Introduction" (Section 1.1) of this Chapter, the "tiering" process is unavailable for this Project for purposes of CEQA, though it is available for purposes of NEPA.

1.4 Similarities and Differences between NEPA and CEQA

Although there are similarities between CEQA and NEPA, the two Acts are not identical in all respects. For example, NEPA is a procedural law requiring agencies to evaluate a range of reasonable alternatives, disclose potential impacts, and identify feasible mitigation. CEQA, in contrast, is partly "substantive" in that it requires an agency to adopt "feasible" mitigation measures for any "significant effect on the environment." In a full-blown EIS, as opposed to an Environmental Assessment (EA), reasonable alternatives must be rigorously and objectively evaluated at a greater level of detail under NEPA than is required under CEQA. The threshold for preparing an EIR, as opposed to an EIS, is lower under CEQA than under NEPA. It is therefore not uncommon to have a joint NEPA/CEQA document that is not an EIS/EIR but rather an EA/EIR. This document is an example of an EA/EIR. It has been prepared because Trinity County, as CEQA lead agency, determined that the impacts of the project were sufficient to trigger an EIR under the low threshold CEQA standard. The federal lead agencies, however, do not believe that an EIS is required under the higher NEPA threshold. Even so, the EA shares many attributes of an EIS – in particular the detailed analysis of alternatives.

Because of the obligation under CEQA to mitigate "significant effects on the environment" when feasible, the characterization of impacts as being either "significant" or "less than significant" is very important under CEQA. For this reason, this EA/EIR has been written in a manner that identifies, for CEQA purposes, "significance thresholds" for anticipated impacts. Some of these thresholds even have the force of law under CEQA. For example, CEQA Guidelines Section 15065 requires a "mandatory finding of significance" where a project "has the potential to reduce the number or restrict the range of an endangered, rare or threatened species," officially listed under either the federal Endangered Species Act (ESA) (16 USC Section 1531 et seq.) or the California Endangered Species Act (CESA)(California Fish & Game Code, Section 2050 et seq.). No such obligation exists under NEPA. CEQA thresholds of significance for other issue areas/resources are developed using applicable regulations, where they exist, or best professional judgment.

CEQA requires that this Draft EA/EIR propose mitigation measures for each significant effect of the project subject to the approval of an agency governed by California law, even where the mitigation measure cannot be adopted by the "lead agency" (Trinity County for this project), but can only be imposed by another responsible agency (i.e., CDFG, North Coast Regional Water Quality Control Board (NCRWQCB).

1.4.1 NEPA/CEQA Process

The Draft EA/EIR is submitted to responsible public resource agencies, permitting agencies, trustee agencies, the State Clearinghouse, and interested stakeholders. Written and oral comments received in response to the Draft EA/EIR will be addressed. The Trinity County Planning Commission (Planning Commission) will review the EA/EIR, the public testimony and comments, and will make a recommendation to the Board of Supervisors on whether to certify the final EIR portion of the EA/EIR under CEQA. The Board of Supervisors then chooses to approve or deny certification of the document and the local approvals required for the Project. If the Board of Supervisors chooses to certify the EIR, it must first adopt "CEQA Findings" addressing whether each significant effect of the Project has been mitigated either through mitigation measures or through an alternative (*CEQA Guidelines*, Section 15091, subdivision (a)). If, after adopting such findings, the Board of Supervisors is still faced

with unmitigated significant effects or does not have control over the mitigation measures necessary to mitigate certain impacts, it must also adopt a "statement of overriding considerations" before it can approve the Project. That statement must set forth the economic, social, or other benefits of the Project that they believe outweigh its unmitigated significant environmental effects (*CEQA Guidelines*, Section 15093). CEQA requires that, in order to commence a 30-day statute of limitations for any legal challenge to an EIR, the lead agency file a Notice of Determination (NOD) with the County clerk and with the State Office of Planning and Research (where State agency approvals are required) after deciding to approve a project for which an EIR has been adopted.

The filing of the NOD completes the CEQA environmental review process. For this Project, per standard procedures, the Board of Supervisors, if it opts to proceed with the portions of the project under the County's control, would certify the Final EA/EIR, file the NOD(s), and forward these documents to the NEPA lead agencies (i.e., BOR and BLM) along with a recommendation regarding what the County believes should be the preferred alternative for each proposed bridge. The NEPA process will be complete with the federal lead agencies' adoption of the Finding of No Significance (FONSI), unless, through public review or the receipt of other information not presently available, the NEPA lead agencies decide that a full EIS is required.

1.4.2 Mitigation Monitoring and Reporting Program

Although there are no NEPA statutes or regulations that explicitly require that all significant project impacts be avoided or mitigated to a less-than-significant level, or that any adopted mitigation measures developed as part of an EA be "monitored" to ensure that they are carried out, Public Resources Code section 21081.6(a), subdivision (a) requires lead agencies under CEQA to "adopt a reporting and mitigation monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment."

Throughout this Draft EA/EIR, mitigation measures have been clearly identified and presented in language that will facilitate establishment of a monitoring and reporting program. Any mitigation measures adopted by the County as conditions of project approval will be included in a Mitigation Monitoring and Reporting Program (MMRP) to verify compliance. The Draft MMRP is included as **Appendix D** and the Final MMRP will be included as an appendix to the Final EA/EIR. The approval of such a program will be part of any action taken by Trinity County with respect to the Project. When other regional or state agencies subject to CEQA approve portions of the Project under their own jurisdiction or regulatory power, these "responsible agencies" will be required to adopt their own MMRPs (*CEQA Guidelines*, Section 15097, subd. (d)).

1.5 Scoping and Public Involvement

The County initiated the Public Scoping process by forwarding a Notice of Preparation (NOP) of an EIR to the State Clearinghouse on April 11, 2002. The NOP is included in this document as **Appendix B**.

The NOP was circulated to the public, to local, state, and federal agencies, and to other interested parties in order to solicit comments on the proposed Project. The public scoping period was April 11, 2002 through May 11, 2002, and comments were received through May 17, 2002. The BOR and the County held a joint NEPA/CEQA scoping meeting on May 2, 2002 in Weaverville, California. During this meeting, members of the public were asked what issues they felt should be addressed in this Draft EA/EIR. As the public comment period continued, the lead agencies received letters that helped identify areas of concern. These areas of concern and other oral comments received at the scoping meeting were considered during the preparation of the Draft EA/EIR. The scoping and public involvement

process is summarized in a document entitled Scoping Report that was prepared for this project. The NOP is included as **Appendix B,** and the Scoping Report, provided to the lead agencies, is included as **Appendix C**.

The scoping process determined that the proposed Project could lead to significant impacts on specific natural resources and on the human environment. Based on the comments received during the scoping process, the issues addressed in this Draft EA/EIR include the following:

- Land use
- Geology, fluvial geomorphology, and soils
- Water resources
- Water quality
- Fishery resources
- Vegetation, wildlife, and wetlands
- Recreation
- Socioeconomics, population, and housing
- Tribal trust
- Cultural resources
- Air quality
- Environmental justice
- Aesthetics
- Hazardous materials
- Noise
- Public services and utilities / energy
- Transportation and traffic circulation
- Construction-related impacts
- Cumulative impacts

These issues were used to develop the resource areas and associated impact analysis described in Chapters 3 and 4.

1.5.1 Areas of Potential Controversy

The following issues associated with the proposed Project are anticipated to be controversial based on comments received during the public scoping process:

- Public vs. private ownership of the bridges
- Potential trespass on private lands
- Long-term maintenance of the bridges
- Temporary access during construction
- Access to a Nor-Rel-Muk Nation cultural resource site near Salt Flat on BLM lands
- Bridge design criteria including width, weight limits and floodwater clearance
- Short-term construction impacts
- Source of construction funds
- Potential effects to Wild & Scenic River designation (i.e., Outstandingly Remarkable Values [ORVs])

1.5.2 Public Review

This document is being circulated to local, state, and federal agencies and to interested organizations and individuals who may wish to review and comment on the analysis provided in this Draft EA/EIR. Publication of this Draft EA/EIR initiates the beginning of a 45-day public review period. The Planning Commission and Board of Supervisors will hold at least one public hearing on the Draft EA/EIR during the public review period. Public comment on the Draft EA/EIR will be accepted both orally and in written form; however, to ensure proper interpretation of remarks, written submittals are highly encouraged. Notice of the time and location of the public

hearing(s) will be published by the County prior to the actual hearing date. All comments and/or questions regarding the Draft EA/EIR, raising issues under NEPA, CEQA, or both, should be addressed to:

Doug Schleusner, Executive Director
Trinity River Restoration Program
United States Department of Interior – Bureau of Reclamation
PO Box 1300
1313 South Main Street
Weaverville, California 96093
Phone: (530) 623-1800
FAX: (530) 623-5944

Mr. Schleusner will ensure that Trinity County, as CEQA lead agency, receives copies of comments submitted, for review and response for CEQA purposes. The Draft EA/EIR will be routed through the State Clearinghouse and will be available online at the following Internet addresses: <http://trinitycounty.org> and the Mid-Pacific Region Bureau of Reclamation NEPA page for the Northern California Area at <http://www.mp.usbr.gov/nepa/>. Copies of the Draft EA/EIR will be available for review at the following locations:

Trinity River Restoration Program
United States Department of Interior
Bureau of Reclamation
1313 South Main Street
Weaverville, California 96093

Trinity County Library, Weaverville Branch
211 Main Street
Weaverville, California 96093

Trinity County Planning Department
190 Glen Road
Weaverville, California 96093

Bureau of Reclamation, Shasta Area Office
16349 Shasta Dam Boulevard
Shasta Lake, California 96019

Bureau of Land Management, Redding
355 Hemsted Drive
Redding, California 96002

Trinity County Planning Department
Natural Resources Division
98A Clinic Avenue
Hayfork, California 96041

Trinity County Library, Hayfork Branch
Hyampom Road and State Route 3
Hayfork, California 96041

Trinity County Library, Trinity Center Branch
Scott Museum Bldg, Airport Road
Trinity Center, California 96091

Bureau of Reclamation, Sacramento
2800 Cottage Way
Sacramento, California 95825-1898

Bureau of Land Management, Sacramento
2800 Cottage Way, Suite W-1834
Sacramento, California 95825-1886

1.6 Purpose and Need for the Action

NEPA regulations require that each EA briefly specify the need to which the agency is responding in proposing the various alternatives, including the proposed action (40 C.F.R. § 1508.9, subd. (a)). Similarly, CEQA requires that each EIR include a statement of the objectives to be achieved by the proposed project (*CEQA Guidelines*, § 15124, subd. (b)). The objectives are intended to help the implementing agency develop a reasonable range of alternatives and aid decision-makers in preparing findings or a statement of overriding considerations, if necessary.

This Draft EA/EIR has been prepared so that the BOR and the BLM, as co-lead agencies under NEPA, and the County, as the lead agency under CEQA, may respectively meet the requirements of each Act. This document is

intended to function as a joint environmental document in accordance with 40 Code of Federal Regulations (CFR) Part 1506.2 of the federal Council on Environmental Quality NEPA Regulations and Section 15170 of the *CEQA Guidelines*.

This Draft EA/EIR provides a description of the proposed project's conceptual design alternatives, as well as a comprehensive environmental analysis of the site-specific impacts associated with project implementation. Before the publication of a final EA/EIR for this project, decision makers, responsible and trustee agencies, and the public will have the opportunity to review the information set forth in this Draft EA/EIR and to comment on its findings. This public process will be implemented pursuant to NEPA and CEQA guidelines.

This EA has been prepared under NEPA in order to determine whether the project will constitute a major federal action that would significantly affect the human environment. If the analysis provided in the EA supports the finding that the proposed action would have no significant adverse effect on the environment, a FONSI will be prepared. However, if the EA finds that the proposed action will result in a significant effect on the environment, an EIS will be required. At present, BOR and BLM, based on the analysis set forth in this document, believe that a FONSI will be appropriate, and that an EIS is not required. That determination is potentially subject to change, however, after receipt and consideration of comments provided during the public comment period. In other words, the appropriateness of a FONSI cannot be definitively determined absent a review of information generated through public review.

CEQA requires the preparation of an EIR when the lead agency makes a determination that there is substantial evidence that the project may have a significant effect on the environment. The County has determined that an EIR should be prepared for this project because preliminary analysis by County Staff identified the possibility that the project may cause potentially significant environmental impacts as defined in the *CEQA Guidelines* (California Code of Regulations [CCR] Title 14, Section 15000 et seq.).

1.6.1 Purpose and Need Statement

The purpose of the proposed action is to modify or replace, as necessary, the existing Salt Flat, Bucktail, Poker Bar, and Biggers Road bridges across the Trinity River in order to accommodate possible future operational changes to the Trinity River Division of the Central Valley Project.

The need for the proposed action results from:

- The **existing** high likelihood of flooding (pre-Trinity ROD) of the four bridges and/or their access roads with potential loss of property and lives (as exemplified during the 1997 New Year's Day Flood).
- The current limitation on the operation of Trinity Dam during periods of high inflows, which limits safety of dam water releases to the Trinity River via Lewiston Dam to 6,000 cfs when the actual release capacity of the Trinity Dam is 13,750 cfs.
- Requirements in the Secretary of Interior's December 29, 2000, Trinity River Record of Decision (ROD) to restore the Trinity River fishery through a combination of higher releases from Lewiston Dam (up to 11,000 cfs), floodplain infrastructure improvements, channel rehabilitation projects, fine and coarse sediment management, watershed restoration, and an Adaptive Environmental Assessment and Management Program.
- The directive of the United States District Court of the Eastern District of California, in *Westlands Water District, et al., v. U.S. Department of the Interior, et al.* (Civil Action CIV – F – 00-7124-OWW/DLB)

(E.D. Cal.) requiring that "[a]ll non-flow measures prescribed by the ROD shall proceed" while the Department of Interior prepares a SEIS to remedy the defects in the original EIS prepared for the December 29, 2000, ROD.

1.6.2 GOALS AND OBJECTIVES OF THE PROPOSED ACTION

The following goals are derived from the FEIS/EIR and the December 19, 2000 ROD. These goals support the Proposed Action and provide a framework for the development of alternatives required by NEPA and CEQA:

- Provide safe and reasonable year-round access to parcels of land served by the Salt Flat, Bucktail, Poker Bar and Biggers Road bridges across the Trinity River.
- Allow dam operators maximum flexibility to provide instream flow releases from Lewiston Dam adequate to meet the fishery and geomorphic flow needs for the mainstem Trinity River and to fulfill the Trinity River Total Maximum Daily Load (TMDL) for sediment and restore the coldwater fishery beneficial use.

The following project objectives apply to the project's lead/responsible agencies for CEQA purposes:

- Minimize the threat to public safety and potential damage to property posed by the existing high likelihood of flooding.
- Provide maximum flexibility for implementing a variety of potential Trinity River fishery flow alternatives, as well as other flow alternatives outside the Record of Decision such as increasing dam releases during periods of high downstream tributary inflows.
- Allow for high-efficiency sediment transport in the Trinity River to maximize the amount of sediment transported on a per acre-foot basis so that Trinity River can be removed from California's Clean Water Act Section 303(d) Impaired Waterbodies List, while minimizing the total amount of water necessary to transport sediment through the river system.
- Provide maximum flexibility for operations of the Trinity River Division during periods of high runoff and flooding which could result in increased water in storage available for multiple beneficial uses (i.e., fisheries, recreation, water supply, water quality and power production).
- Provide alternative access on a short-term basis during project implementation.
- Facilitate recovery of fish and wildlife resources that are listed as threatened and endangered.

The following objectives apply to the projects responsible and trustee agencies, including the HVT, NCRWQCB, the State Lands Commission (SLC), the CDFG, and the SWRCB:

- Comply with the Water Code to ensure the highest reasonable quality of waters of the state and allocate those waters to achieve the optimum balance of beneficial uses.
- Protect the public trust assets of the Trinity River watershed.
- Protect, conserve, restore, and manage fish, wildlife, and native plant resources.
- Comply with the Water Quality Control Plan for the Hoopa Valley Indian Reservation to preserve and enhance water quality on the Reservation, and to protect the beneficial uses of water.

1.7 General Setting and Location

The Trinity River originates in the rugged Salmon-Trinity Mountains of northern California, in the northeast corner of Trinity County, California. The river flows generally southward until Trinity and Lewiston Dams impound it. From Lewiston Dam the river flows westward for 112 miles until it enters the Klamath River near the town of Weitchpec on the Yurok Reservation. The Trinity River passes through Trinity and Humboldt Counties and the Hoopa Valley and Yurok Indian Reservations, draining approximately 2,965 square miles. The Klamath River flows northwesterly for approximately 40 miles from its confluence with the Trinity River before entering the Pacific Ocean (**Figure 1-1**).

In general, the proposed project focuses on the 10 miles of the mainstem Trinity River between the Salt Flat Bridge and the Biggers Road Bridge near the community of Lewiston and upstream of Douglas City (**Figure 1-2**). The direct, indirect, and cumulative impacts of the project alternatives occur within the Trinity River Basin. This document addresses infrastructure improvements and/or modifications to the four bridges described below and does not address other structures affected by the peak instream flows provided by the ROD (USFWS et al. 2000). The flow regime identified in the ROD was used to evaluate the existing bridges spanning the Trinity River between Lewiston and Douglas City. In the future, additional NEPA/CEQA documents will be completed, as necessary, to address other floodplain structures.

1.8 Project Facilities

The FEIS/EIR identified four bridges that were susceptible to impacts associated with peak fishery flow releases identified in the ROD. Appendix C of the FEIS/EIR, Implementation Plan for the Preferred Alternative, describes the features of the existing bridges at these four locations. This document is available for review by member of the public at the office of the TRRP (1313 South Main Street, Weaverville, CA 96093).

Adverse impacts to these bridges by flood flows include overtopping, flooded approaches, and scouring, some of which have occurred at all four bridge sites as recently as 1997. During the 1997 New Year's Day flood, these bridges and/or their approaches were rendered inaccessible by flood flows that severely limited residential and commercial use of these facilities for several days. Provided below is a brief summary of the 1997 flooding conditions that occurred at each of the four locations:

- **Salt Flat:** Floodwater was observed up to 3 inches above the top of the bridge deck. Flows were estimated at approximately 11,000 cfs.
- **Bucktail:** The western approach road to the bridge was overtopped by about two feet of water. Flows were estimated at approximately 11,000 cfs.
- **Poker Bar:** The lowest point on the two bridges, the right-side of the left bridge deck, was 4 inches above water. The mid-channel island and the road between the bridges were both over-topped by up to 1.8 feet of water. Flows were estimated at approximately 15,000 cfs.
- **Biggers Road:** Floodwater was observed to overtop the bridge by about 1.25 feet of water. Flows were estimated to be 15,000 cfs.

1.8.1 Salt Flat Bridge, River Mile 107

The Salt Flat project study area is located within the *Lewiston, California* 7.5' U.S. Geological Survey (USGS) quadrangle, Section 13, Township 33 North, Range 9 West, Mount Diablo Base and Meridian (MDB&M). The Salt

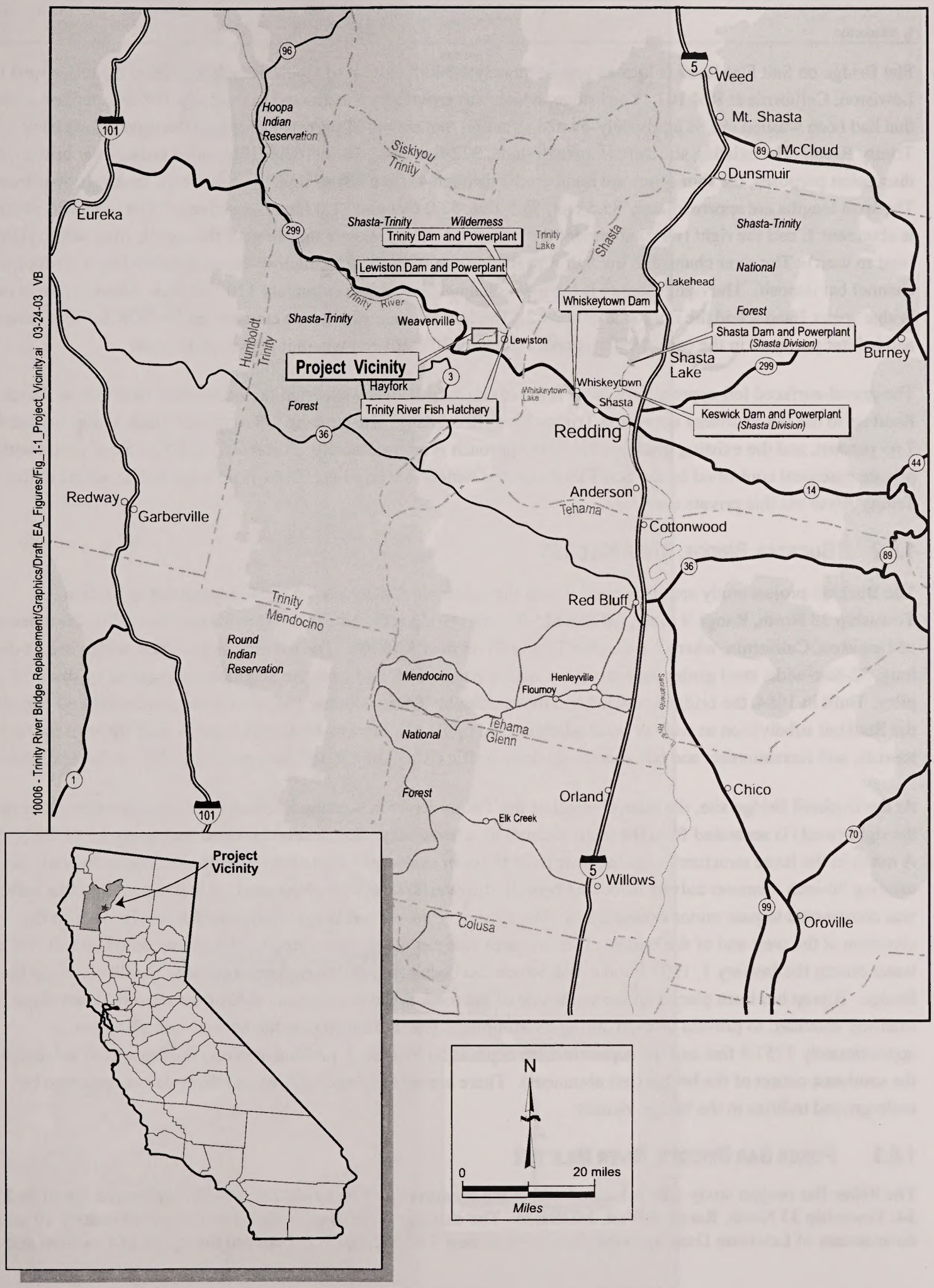


Figure 1-1
Project Vicinity

Flat Bridge on Salt Flat Road is located approximately 1,000 feet west of Goose Ranch Road and 2.5 miles west of Lewiston, California at RM 107. The bridge, which was reportedly constructed in the early 1980s to replace a bridge that had been washed out, is a privately-owned structure that serves 27 parcels located on the right (west) bank of the Trinity River. The existing structure is a single-lane, 272-feet-long, 10-feet-wide, four-span railway car bridge. For discussion purposes, the four spans are numbered 1 through 4, from left to right (east to west), looking downstream. The span lengths are approximately 85.5 feet, 85.5 feet, 52.0 feet and 51.0 feet, respectively. The left (east) abutment is abutment 1, and the right (west) abutment is abutment 2. The piers are numbered 1 through 3, from left to right (east to west). The river channel at the Salt Flat Bridge site is divided during low flows, separated by a 70-foot-wide channel bar deposit. The right channel is the main channel, and is approximately 110 feet wide where it passes under bridge spans 3 and 4 and the right side of span 2. The left channel, which was constructed by BOR for fish spawning and habitat purposes in the early 1990s, is approximately 30 feet wide where it passes under span 1.

The gravel-surfaced left approach roadway is approximately 16 feet wide from its intersection with Goose Ranch Road up to the left abutment across the Trinity River floodplain. The existing left approach grade is approximately 7.65 percent, and the existing grade on the right approach is approximately 15 percent. Salt Flat Road exists within a private easement controlled by the Salt Flat Property Owners Association. There is no legal public access to the Trinity River via this private easement.

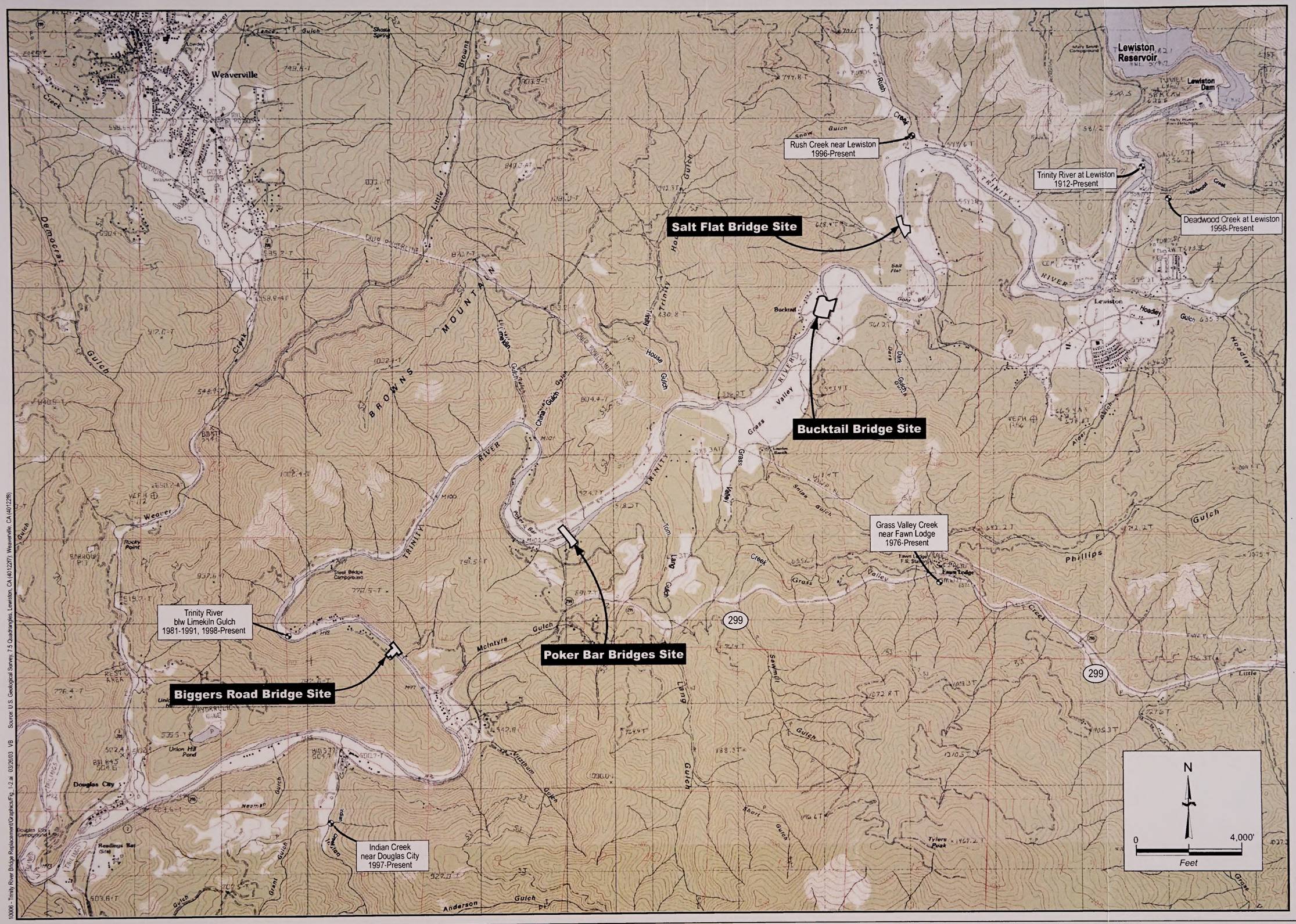
1.8.2 Bucktail Bridge, River Mile 105

The Bucktail project study area is located within the *Lewiston, California* 7.5' USGS quadrangle, Section 3, Township 33 North, Range 9 West, MDB&M. Bucktail Bridge (Br. No. 5C-207) is located about five (5) miles west of Lewiston, California, where it spans the Trinity River near RM 105. The existing single-span bridge is a 76-feet-long, 32-feet-wide, steel girder superstructure with concrete deck and concrete abutments supported by steel "H" piles. Built in 1984, the bridge is owned and maintained by Trinity County and services approximately 60 parcels in the Bucktail subdivision as well as lands administered by BLM. Browns Mountain Road is used by local traffic, tourists, and recreationists and has an average daily traffic (ADT) of 170 vehicles per day (1998) at Bucktail Bridge.

At the Bucktail Bridge site, the main channel of the Trinity River is near the left (east) bank; an overflow channel on the right (west) is separated from the main channel by a levee extending several hundred feet upstream of the bridge. A notch in the levee structure exists to allow river flows in excess of 6,000 cfs to enter the overflow channel. An existing 30-inch diameter culvert is located beneath the overflow section of the road. It is assumed that this culvert was constructed to pass minor excess flows. The road over the culvert is approximately six feet lower than the elevation at the west end of the bridge. This low area was reportedly overtopped and was inundated by two feet of water during the January 1, 1997 flood event, which has been estimated to be approximately 11,000 cfs at the Bucktail Bridge. Riprap has been placed on the south side of the road, at the downstream side of the culvert, down slope of the roadway shoulder, to prevent erosion during overtopping. The low chord near the bridge right abutment is approximately 1757.8 feet and the superstructure depth is 53 inches. A parking area and fishing access is located at the southeast corner of the bridge (left abutment). There are no overhead utilities and there do not appear to be underground utilities in the bridge vicinity.

1.8.3 Poker Bar Bridges, River Mile 102

The Poker Bar project study area is located within the *Weaverville, California* 7.5' USGS quadrangle, Sections 33 and 34, Township 33 North, Range 9 West, MDB&M. The existing Poker Bar bridges, located approximately 10 miles downstream of Lewiston Dam, span the Trinity River near RM 102, halfway between the towns of Lewiston and



10006 - Trinity River Bridge Replacement\Graphics\Fig_1-2.ai 03/26/03 VB Source: U.S. Geological Survey, 7.5 Quadrangles, Lewiston, CA (401227); Weaverville, CA (401228)

Figure 1-2
Project Location

Douglas City, California. The bridges are located on Bridge Road, which is located about 1.5 miles north of State Highway 299. Each of these single-span bridges are privately owned and consist of two railroad flatcar structures that cross two separate channels of the Trinity River.

The river bifurcates and flows around an island (Poker Bar) consisting of a very large channel bar deposit. The bridges connect Poker Bar Road with Red Lane, River Road, and Quad P Road and serve seventy-seven (77) parcels on the right (northwestern) bank of the river. The left (southeastern) channel is considered the main channel and for discussion purposes, the bridges are described looking downstream.

The existing structure over the left (southeast) channel is 52-feet-long, 20-feet-wide, and consists of twin side-by-side railroad flatcars supported by concrete abutments on steel "H" piles. The concrete abutments contain two riveted steel caissons, which appear to be remnants of a previous bridge structure. Abutment 2 wing walls are severely cracked, with a large tree growing right next to the north wing wall. The presence of large, concrete slabs in the channel, just downstream of the existing bridge provides further evidence of a previous bridge. The superstructure depth is approximately 2.5 feet, and the low chord elevation is approximately 1726.2 feet near the west end of the bridge (abutment 2).

The existing structure over the right (northwest) channel is 87-feet-long, 18-feet-wide and consists of twin side-by-side railroad flatcars supported on abutments consisting of four steel "H" piles and a timber log. This bridge does not have a concrete abutment or wing walls of any kind. The superstructure depth is approximately 3 feet and the low chord elevation is approximately 1726.7 feet near the east end of the bridge (abutment 1). The right channel bridge deck is paved with asphalt concrete pavement.

The approach roadways are approximately 18-feet-wide, with chip seal surfacing and no shoulders. Horizontal alignment is on a curve at the left approach. The bridges and right approach are on tangent. Vertical alignment is on a generally declining grade form left to right, with a low area located between the bridges. The left approach along the curve is located in a cut slope. Access to Poker Bar is via the roadway between the bridges.

1.8.4 Biggers Road Bridge, River Mile 97

The Biggers Road Bridge project study area is located within the *Weaverville, California* 7.5' USGS quadrangle, Section 32, Township 33 North, Range 9 West, MDB&M. This bridge is located adjacent to Steel Bridge Road, approximately 3 miles upstream (east) of Douglas City, near RM 97. The one-lane bridge is privately owned and serves 9 parcels on the right (west) bank of the river. The existing structure is a four-span, 204-feet-long, 12-feet-wide, railway flatcar bridge supported on concrete piers and abutments. For discussion purposes, the four spans are numbered 1 through 4, from left to right, looking downstream. Span lengths are 30 feet, 71.9 feet, 55.5 feet, and 46.5 feet, respectively. The abutment on the left is 'abutment 1,' and the abutment on the right is 'abutment 2.' From left to right, the piers are numbered 1 through 3.

The bridge deck consists of 4-inch-thick by 12-inch-wide wood planks, placed perpendicular to the direction of traffic. Two rows of three 4-inch-thick by 12-inch-wide running boards are placed longitudinally on top of the deck. The running boards distribute wheel loads to the bridge deck. The bridge rail consists of 4-inch-square wood posts and railing. The age of the existing wood decking and bridge railing is not known, but the bridge decking, running boards and railing are highly weathered.

The age of the concrete piers and railroad flatcars is unknown. According to local residents, the railroad flatcar bridge was constructed in the early 1970s to replace an existing log-span bridge. It appears that the railroad flatcars were not new when they were installed, and were modified to fit the existing piers and abutments. The railroad flatcar used for span 1 has a large notch cut into the bottom flange and web to make it fit at the abutment end. Because the railroad flatcar for span 4 was not long enough, an additional piece was spliced onto the end near pier 3.

The approach roadways immediately adjacent to the bridge are gravel surfaced. The left approach is of varying width and intersects Steel Bridge Road approximately 25 feet east of abutment 1. The right (westerly) approach leading away from the bridge is 12-feet-wide on a sharp horizontal right curve that provides access to the other parcels. A private residence is located approximately 60 feet west of abutment 2.

1.9 Description of the Proposed Action

The Proposed Action is to replace Biggers Road Bridge on Biggers Road and the two Poker Bar Bridges on Bridge Road, near the community of Douglas City. Salt Flat Bridge on Salt Flat Road, near the community of Lewiston in Trinity County, California will also be replaced. At the Bucktail Bridge on Browns Mountain Road (Bridge No. 5C-207) near Lewiston in Trinity County, California, the BOR and County are proposing to keep the existing bridge intact, construct a new culvert structure, and raise the elevation for a segment of Browns Mountain Road to the west (right bank).

At the Salt Flat Bridge site the BOR has determined that work within the active low-flow channel will need to be completed during the fall and winter of 2003-2004 (outside of the June 15 - October 15 instream work window which was originally anticipated) in order to complete construction of the new bridge by spring 2004. Though the schedule is not ideal for avoiding construction impacts, environmental coordination, permitting, and construction contracting schedules have necessitated this timing.

Given this timetable, the BOR has designed the Project, including the construction methods to reduce environmental impacts. The Project, in combination with its conservation measures, will have minimal short-term impacts to the Trinity River aquatic community and essential fish habitat.

The Project, as defined, allows for efficient and realistic scheduling of construction activities to ensure that the work will be accomplished in the necessary timeframes. Through the interdisciplinary process, the impacts of the proposed action, specifically the late-season construction at the Salt Flat site, will be effectively mitigated.

1.9.1 Salt Flat Bridge

The Proposed Action for the Salt Flat Bridge replacement will occur within the 9.11 acre Environmental Study Limits (ESL) shown in **Figure 1-3a**. The project ESL includes the Salt Flat Road crossing on the Trinity River, the in-channel flood plain, and portions of six privately owned parcels, and a portion of land managed by BLM. The project area extends approximately 700 feet upstream and 600 feet downstream of the existing bridge. Detailed site plans are included in Chapter 2.

The proposed action bridge at Salt Flat will be constructed approximately 4 to 44 feet downstream (centerline to centerline) of the existing left and right bridge abutments, respectively. The new alignment will diverge approximately 8 degrees from the existing bridge alignment. Because the new left abutment will be constructed nearly at the location of the existing left abutment, the first flatcar span of the existing bridge will be "rotated" and

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Figure 1-3a
Salt Flat Bridge
Project Environmental Study Limit

modified to provide temporary construction access for the property owners. The bridge will be constructed on private property, and will be owned collectively by the Salt Flat Property Owners Association. The bridge type is a two-span prefabricated steel truss with reinforced concrete deck. The bridge will be approximately 280 feet long (two 140 foot spans), with an 18-foot clear roadway width, designed to carry HS20 loading. New structures designed for HS20 vehicles are capable of carrying any legal load vehicle and do not require posted limits.

The superstructure and guardrail will be fabricated with weathering steel. (High-strength weathering steel develops a surface layer that protects it from corrosion and eliminates the need to maintain standard painted coatings). The proposed action requires raising the left road approach as much as approximately 4 feet to provide sufficient hydraulic freeboard over the river.

The increased span length will provide a wider flow area under the bridge, reducing the backwater surface elevations and water velocities. This will result in a more natural condition than the existing constricted channel. The abutments and single column bent will support the superstructure and will be located outside of the active low-flow channel (Q = 450 cfs). This will allow the contractor to minimize construction activity in the active low-flow channel. Construction of the right abutment and the single column bent is planned for completion within the active low-flow channel during the fall and winter of 2003-2004 (outside of the June 15 – September 15 dry season in-river construction period).

The right abutment will be founded on 2.5-foot diameter drilled shafts. Because of the height of the abutment and bridge above the existing terrain, a 15-foot-high (approximate) embankment will be constructed around the abutment. The embankment will be constructed of compacted earth materials retained behind a segmental (retaining) wall. A 1.5:1.0 riprap slope will descend from the wall to protect the embankment and wall from hydraulic scour.

The slope will be faced with well-graded, 18-inch maximum diameter, angular riprap underlain by geotextile fabric. The riprap slope will extend 15 to 20 feet into the active low-flow channel for a length of about 80 feet parallel to the channel bank. Riprap will be carefully placed using a combination of mechanical and hand-methods (not dumped). The toe of the riprap slope has been designed such that no excavation in the channel is required for placement. It is estimated that right abutment riprap placement in the channel may take up to 5 days to complete.

The single column bent will be constructed on the mid-channel bar above the active low-flow channel elevation. The contractor will be required to provide access to the mid channel bar by constructing a temporary crossing that provides a stable route for large equipment. The stable crossing will minimize impacts to beneficial uses, including aquatic organisms and domestic and agricultural water supplies.

A conservation measure will be included in the project to exclude spawning fish from all of the instream work area prior to and during construction. Prior to September 1 the BOR will place exclusionary mats or fence on the stream bottom of the work area to prevent fish spawning. This effort will avoid any impacts to early fish life stages that are immobile and very sensitive to the crushing effects of heavy equipment operation on the stream bottom. Exclusionary anti-spawning mats or fencing material will be sufficiently anchored to the stream bottom during the instream work period to preclude spawning anadromous fish from digging redds in the work area. These features will be removed after completion of instream work and prior to flood season. They will be anchored sufficiently to ensure that an unplanned high flow release from the dam will not cause them to release from their anchorage and create a litter problem.

The temporary crossing is planned to be constructed by placing and contouring spawning gravel in the channel to provide an adequate base for placement of steel landing mats (similar to temporary military runway matting). The mats will be placed approximately 1-foot below the low-flow water surface elevation and will extend up the channel banks to an elevation providing approximately 3 feet of freeboard above the low-flow water surface elevation. The mats will remain in place until removed during the subsequent summer (June 15 – September 15) in-channel work season. The spawning gravel will remain in the stream channel to be redistributed to benefit fish spawning as it is washed down stream by subsequent high water events. The bent will be a 3.5-foot diameter column anchored to bedrock in one 3.5-foot diameter drilled shaft. It will have a small "footprint," impacting the least amount of area, and will be relatively quick to install. It is estimated that a working platform with an area 35-feet-wide by 55-feet-long (+/- 1900 ft^2) will be needed for equipment setup, access for bent construction and crane operation.

The working platform will be constructed using cut-and-fill methods with existing site materials and/or imported spawning gravels. Dump trucks and earthmoving equipment may be used to construct the mid-channel bar platform. Bent construction will be accomplished using standard equipment and procedures based on types of equipment available. The reinforced concrete abutments will be founded on drilled shafts anchored in bedrock.

The contractor will utilize the mid-channel bar platform for bent construction and for positioning a crane to lift the bridge superstructure in place. It is anticipated the superstructure will be installed during the 2003-2004 fall/winter season after the in-river construction period has ended. Side channel crossing to access the platform will be kept to a minimum and is anticipated to occur roughly 10 to 20 times for each construction component (i.e. bent and superstructure installation). Vehicles crossing the side channel may include: earthmoving equipment, crane(s) and trucks. The contractor will be required to clean vehicles prior to crossing the side channel. Staging areas for construction maybe located immediately upstream or downstream of the existing left abutment or may be located upstream on private property approximately 200 feet upslope from the left abutment.

All material and water used for drilling operations will be contained and disposed of at an approved off-site disposal site. Make-up water pumped from the river will pass through a screen at the inlet with maximum ¼-inch openings and a maximum intake velocity of 0.8 feet per second. The contract specifications will prohibit discharge of cement fines, drilling fluids, contaminated water or other construction byproducts. Slope protection measures will be implemented at abutments and constructed slopes to provide erosion protection from high flows.

Demolition and removal of piers 2 and 3 will be done within the typical dry season work window (June 15 – September 15, 2004). The work may require installation of in-channel access ramps extending from the right and left banks to the piers, depending on contractor methods. Any in-channel ramps/crossings will be constructed upstream of the existing bridge and will cross the side channel and extend from the left and right banks to a point at or near piers 2 and 3. To the extent possible, ramps will be constructed of clean, washed spawning-size gravels. Larger boulders may be used where high water velocities necessitate measures to minimize ramp mobilization. The two required ramps would be constructed at different times so that impacts to migrating fish are negligible.

Demobilization procedures will include clean up of all construction debris, fine-grading and contouring to "blend" new grades to existing grades and revegetation where required by final design and/or permits.

1.9.2 BUCKTAIL BRIDGE

The Proposed Action for the Bucktail Bridge site will occur within the 13.71-acre ESL shown in **Figure 1-3b**. The ESL includes the Browns Mountain Road crossing over the Trinity River, the in-channel flood plain, portions of ten

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Figure 1-3b
Bucktail Bridge
Project Environmental Study Limit

privately owned parcels, and portions of BLM land that includes a rock quarry and Klamath mixed conifer upland habitat. Browns Mountain Road and the Bucktail Bridge are managed by Trinity County. The project area extends approximately 340 feet upstream and 150 feet downstream of the existing bridge. Detailed site plans are included in Chapter 2.

The Proposed Action for the Bucktail Bridge consists of raising the west approach roadway and replacing the existing 30-inch-diameter culvert, approximately 215 feet right (west) of the existing bridge, with a 9-foot-wide by 4-foot-high arch structure. The arch culvert design will include a natural "bottom" and will increase the conveyance of flows under the Browns Mountain Road embankment. The design also includes raising the Browns Mountain roadway profile approximately 4.5 feet. The arch structure will have the capacity to convey approximately 80 cfs (existing culvert capacity is approximately 10 cfs). The existing roadway is overtopped during high flow events. The proposed raised roadway embankment and culvert will exhibit hydraulic characteristics similar to the existing system but will be overtopped only during extreme high-flow events greater than the 100-year event. The new culvert structure will be long enough so that the Browns Mountain Road width will remain 32-feet-wide with 2:1 side slopes, and will include guardrails.

The existing bridge will provide about 1.4 feet of freeboard for Q_{100} (13,100 cfs) at the low chord, which is on the right abutment. The freeboard will be higher at the left abutment. For a flow of 15,000 cfs, the water surface elevation is approximately 0.5 feet below the low chord. Slope protection will be provided on both sides of the right approach roadway to protect the embankment from erosion.

The Proposed Action does not require any work within the active low-flow channel (Q = 450 cfs). A detour will be constructed around the existing road and culvert located on the right (west) of the existing bridge, outside of the active low-flow channel. It is estimated that the detour will be in operation for a period of about 8 weeks. The detour will be built within the active flood plain, upstream of the existing road. To construct the detour, the contractor may use an excavator, a dozer or other equipment as needed.

The existing bridge will remain in place and available for use during construction, and will be used to provide access for homeowners and construction equipment and personnel. Keeping the existing bridge open will minimize impacts to the homeowners. Traffic control will be the provided by the contractor and it is the contractor's responsibility to provide access for the homeowners. Temporary closures of Browns Mountain Road and Bucktail Bridge may be needed at certain times during construction and near the completion of the work, when tying the new road alignment onto the existing road alignment.

1.9.3 POKER BAR BRIDGE

The Proposed Action for replacing the Poker Bar Bridges will occur within the 7.85-acre ESL shown in **Figure 1-3c**. The ESL includes the Poker Bar Bridge crossing on the Trinity River, the in-channel floodplain, and portions of five privately owned properties, which are predominantly unvegetated. The project area extends approximately 150 feet on either side of the existing bridge. Detailed site plans are included in Chapter 2.

The proposed Poker Bar Bridges will be constructed approximately 33 feet upstream and parallel to the existing bridges. The bridges will remain on private property, and upon completion of construction will be the property of the Poker Bar Property Owners Association – East. The proposed bridge types are single span prefabricated steel trusses with reinforced concrete deck, with an 18-foot clear roadway width designed to carry HS20 live loading. The

proposed bridges are 110 feet long over the left (southeast) channel and 80 feet long over the right (northwest) channel. The prefabricated steel truss heights will be 9 feet and 7.5 feet respectively.

The bridge superstructure and guardrail will be fabricated with weathering steel. The portion of road between the two bridges and the approaches will have a 20-foot clear roadway width and will be paved with asphalt concrete.

The longer span total will provide for a wider flow area under the bridges that will reduce the backwater elevation and water velocities. This is a more natural condition than currently occurs in the constricted left channel. The proposed bridge abutments will be located outside of the low-flow active channel (Q = 450 cfs). This will allow the contractor the ability to access and install supports without encroaching upon the low-flow active channel.

The proposed bridge abutments will be founded on drilled shafts. Drilled-shaft construction will be completed using standard equipment and procedures (contractor's choice), based on the type of equipment available (e.g.. a track dozer and a drill rig). Abutment wing walls will be reinforced earth with brick facade.

The road between the two bridges will be raised approximately 10 feet. Slope protection will be provided on both sides of the road between the two bridges to protect the roadway embankment from erosion during high flows. The existing bridges will remain open to traffic and will provide access for homeowners and construction equipment and personnel during construction. Keeping the existing bridge open will minimize impacts to the homeowners. Traffic control will be the provided by the contractor and it is the contractor's responsibility to provide access for the homeowners. Temporary closures of Bridge Road and the existing bridges may be necessary at times during construction, particularly near the completion of the work (i.e., when tying the new road alignment onto the existing road alignment).

1.9.4 BIGGERS ROAD BRIDGE

The Proposed Action for the Biggers Road Bridge replacement will occur within the 3.97-acre ESL shown in **Figure 1-3d**. The project ESL includes the existing bridge crossing on the Trinity River, the in-channel flood plain, a portion of Steel Bridge Road, and portions of private properties. The project area extends approximately 200 feet on either side of the existing bridge. Detailed site plans are included in Chapter 2.

The proposed Biggers Road Bridge will be constructed approximately 137 feet upstream of and parallel to the existing bridge. The bridge will remain on private property and will be owned collectively by homeowners of the "Treadwell Subdivision".

The proposed bridge type is a two-span prefabricated steel truss with reinforced concrete deck. The bridge will be approximately 230 feet long (one 130-foot span and one 100-foot span), with a 10-foot clear roadway width, designed to meet load criteria outlined in Chapter 2. New structures designed for HS20 vehicles are capable of carrying any legal load vehicle and do not require posted limits. The superstructure and guardrail will be fabricated with weathering steel. The pre-project Steel Bridge Road profile or vertical alignment begins to overtop when flows reach Q = 15,000 cfs. The existing Steel Bridge Road profile will remain unchanged except for the area in the immediate proximity of the bridge left (east) approach intersection.

The proposed bridge will be designed for overtopping at approximately 18,000 cfs on the left (east) side near the intersection of the bridge and Steel Bridge Road. A small portion of the bridge is subject to overtopping at flows higher than the projected ROD flows. The Proposed Action avoids construction of roadway improvements including

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Figure 1-3c
Poker Bar Bridges
Project Environmental Study Limit

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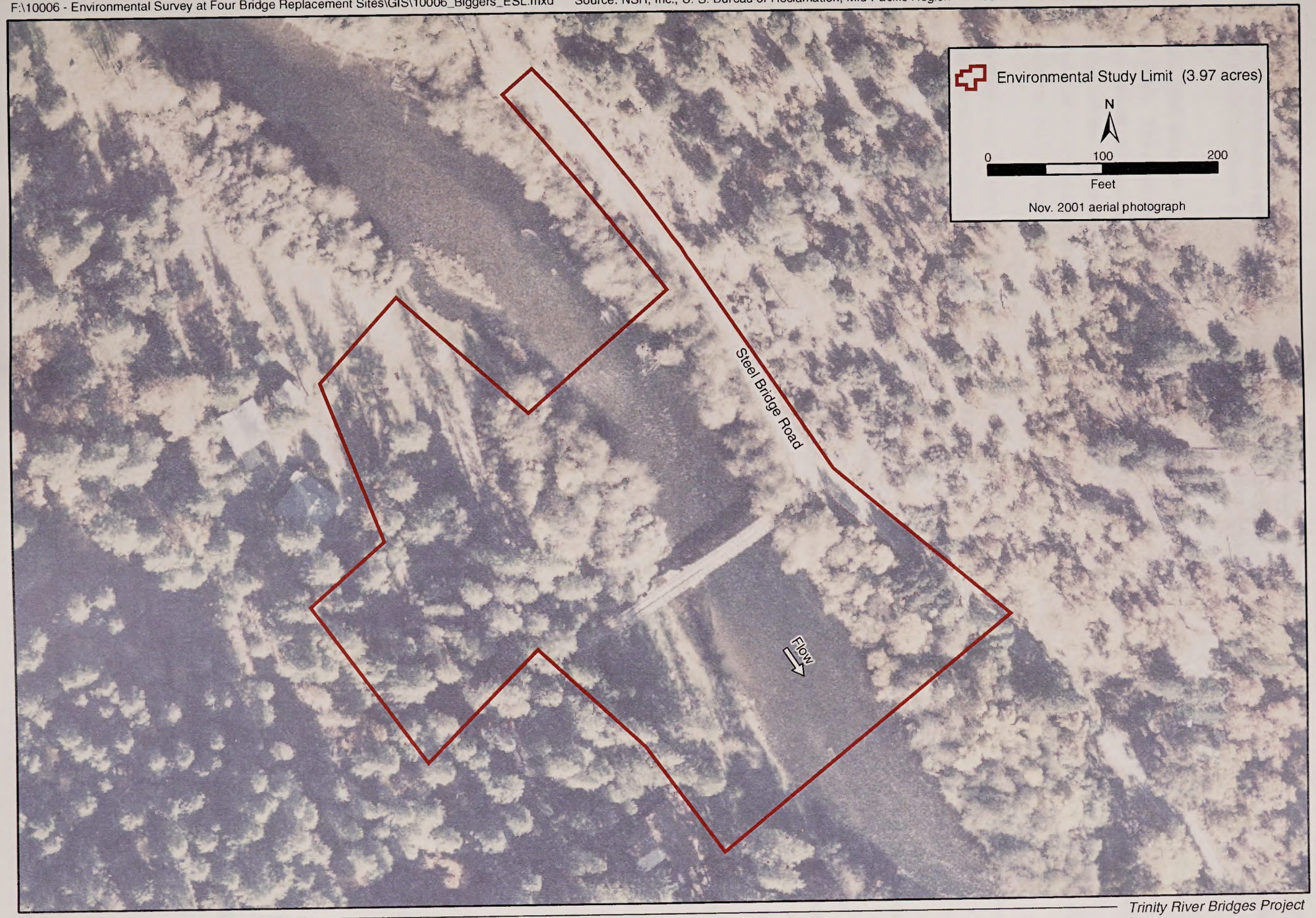


Trinity River Bridges Project

North State Resources, Inc.

Figure 1-3d
Biggers Road Bridge
Project Environmental Study Limit

several hundred feet of retaining wall adjacent to Steel Bridge Road. A turnout area will be provided near the south end of the left abutment, parallel to Steel Bridge Road, to allow vehicles to enter and exit Steel Bridge Road more safely.

The two-span structure will provide adequate flow area under the bridge, reducing backwater effects and velocities for lower flows. The proposed abutments and single column bent will support the bridge superstructure. The bent will be located outside of the active low-flow channel (Q = 450 cfs) of the Trinity River. The bent will be a single 3.5-foot by 7-foot column supported by a reinforced concrete spread footing. The bent has a small "footprint," impacts the least amount of area, and is relatively quick to install. It is estimated that a single working platform with an area 24-foot-wide by 40-foot-long (960 ft^2) will be needed for equipment setup and access for bent construction.

Dump trucks may be used to transport material for construction of the working platform. Bent construction will be done using standard equipment and procedures (contractor's choice) based on type of equipment available. The equipment may be a track dozer or excavator. Abutments and wing walls will be of reinforced concrete.

All material and water required for drilling and installation of the abutments and bents will be contained and disposed of off-site by the contractor at an approved and appropriate disposal site. The specifications will instruct the contractor that no cement fines, drilling fluids or contaminated water will be allowed to enter the ground or stream. The containment and disposal system has not been determined, since equipment to do this type of work varies from contractor to contractor. Slope protection will be placed adjacent to each abutment. The right approach roadway will be raised approximately 3 feet, and will have 2:1 side slopes.

The existing bridge will remain open to traffic and provide access for homeowners and construction equipment and personnel during construction. Closing the existing bridge to construct a new bridge along the existing alignment would require a temporary bridge to provide access during construction. Traffic control will be provided by the contractor and it is the contractor's responsibility to provide access for the homeowners. Temporary closures of Steel Bridge Road may be necessary at certain times during construction and near the completion of the work (i.e., when tying the new road alignment onto the existing road alignment).

1.10 Preparers of the Draft EA/EIR

In 2001 the BOR, Mid-Pacific Region, initiated the Trinity River Bridges NEPA/CEQA process. Initially, this process was to be a NEPA EA / CEQA Initial Study (IS) prepared by BOR and the County. Upon review by the lead agencies, it was determined that an EA/EIR would be the appropriate level of documentation for NEPA/CEQA compliance. Due to the inclusion of lands administered by the BLM and their responsibilities for completing Wild and Scenic River Act: Section 7 Determinations (**Appendix G**), it was determined that BLM should be a co-lead agency in the development of this environmental document. BOR and BLM share the federal lead for NEPA activities and Trinity County is the CEQA lead agency.

1.11 Required Permits and Approvals

Various lead, cooperating, and responsible agencies will use the EA/EIR in conjunction with their approval process. A detailed discussion of the permit and approval process is provided in **Appendix E**. Implementation of any of the proposed action alternatives would require the following federal, state and local permits or approvals:

1.11.1 FEDERAL

U.S. Army Corps of Engineers (Corps)

BOR is required to obtain a Section 404 permit from the Corps for discharge of dredged or fill material pursuant to the federal Clean Water Act (33 USC 1344). This permit is required because construction of any action alternative would involve discharge of dredged or fill material into waters of the United States.

National Marine Fisheries Service and U.S. Fish and Wildlife Service

Federally listed species are protected under the mandates of the ESA of 1973. "Take" of listed species in the form of "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" is prohibited. "Take" that is incidental to an otherwise lawful activity, however, may be authorized by either the USFWS or NMFS, depending upon the species. Sections 7 and 10(a) of the ESA provide a method for permitting an action that may result in an "incidental take" of a federally listed species. Incidental take refers to take of a listed species that is incidental to, but not the primary purpose of, an otherwise lawful activity. Incidental take is permitted under Section 7 for projects on federal land or involving a federal action, while Section 10(a) provides a method for permitting an incidental take resulting from a state or private action. NMFS will prepare a biological opinion that recommends a set of reasonable and prudent measures to be incorporated into project implementation by the federal agency.

Section 7 consultation under the ESA may be necessary between the BOR and NMFS and/or USFWS if potential effects to a federally listed species are identified. An Essential Fish Habitat (EFH) consultation may be necessary between the BOR and NMFS if adverse effects to salmon or their habitat are identified.

Note: A focused Biological Assessment (BA) / Essential Fish Habitat Assessment (EFHA), for submittal to NMFS, has been prepared that addresses potential impacts to federally and state threatened coho salmon [Southern Oregon/Northern California Evolutionary Significant Unit (ESU)] and EFH for both coho and chinook salmon. A copy of the BA/EFHA is provided in **Appendix F**.

Bureau of Land Management

Wild and Scenic Rivers

Federal protection of the Trinity River in the Wild and Scenic System is required under Section 7 of the Federal Wild and Scenic Rivers Act to preserve the free-flowing condition, anadromous and resident fisheries, outstanding geologic, wildlife, flora and fauna, historic and cultural, visual, recreational, and water quality values. Though the Trinity River is designated specifically for its outstandingly remarkable anadromous fishery value, all recreational and free flowing characteristics are to be protected by Section 7 of the Wild and Scenic Rivers Act. A determination that follows the Evaluation Procedure presented in Appendix C of the Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council, Wild and Scenic Rivers Act: Section 7 will be included as Appendix **G**. Under an interagency agreement between the National Park Service, the BLM, and the U.S. Forest Service, the BLM typically has the responsibility for conducting Section 7 determinations for the Trinity River segment associated with the proposed project.

Northwest Forest Plan

In response to the 1994 Record of Decision for the Northwest Forest Plan (Final Supplemental Environmental Impact Statement for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the

Range of the Northern Spotted Owl), the BLM prepared the Mainstem Trinity River Watershed Analysis (WA). The WA focused on a program of habitat restoration actions along the Trinity River corridor. Although the emphasis was placed on aquatic/riparian resources, the WA included upland areas and issues as they relate to the mainstem Trinity River.

1.11.2 STATE OF CALIFORNIA

California Department of Fish and Game

Streambed Alteration Agreement

Trinity County, as the CEQA lead agency providing supplemental funding for construction of the replacement bridges at the Salt Flat and Biggers Road sites is required to obtain a Streambed Alteration Agreement from the CDFG pursuant to the California Fish and Game Code Section 1601. This agreement is required because construction of any of the action alternatives would change the natural state of the Trinity River.

When a 1601 permit application is being processed by the CDFG, the California Resources Agency will be notified of the application and given an opportunity to condition the permit to comply with the California Wild and Scenic Rivers Act.

California Endangered Species Act (CESA) Take Permit

State-listed species are fully protected under the mandates of the California Endangered Species Act (CESA). On August 30, 2002, the California State Fish and Game Commission (Commission) determined that coho salmon in California warranted protection as a Threatened species north of Punta Gorda (including the Trinity River) and as an Endangered species south of Punta Gorda under the CESA. The Commission has directed CDFG to develop a coho salmon recovery strategy plan within one year. Once the coho recovery plan is completed, coho salmon will be listed under CESA. Prior to this listing, incidental take of coho is authorized for any project carried out in compliance with Fish and Game Code Section 1601 or 1603 for which a Streambed Alteration Agreement has been entered into with the CDFG.

Once coho are listed under the CESA, upon obtaining an Incidental Take Statement for "take" of listed Southern Oregon/Northern California Coast coho salmon from NMFS (pursuant to the Federal Endangered Species Act), Trinity County may notify the Director of the CDFG and request a CESA Consistency Determination (pursuant to Section 2080.1 of the California Fish and Game Code). Within 30 days after receipt of this notification, the Director of the CDFG shall determine whether the Federal Incidental Take Statement is consistent with CESA. If it is determined to be consistent with CESA then no further authorization or approval is necessary under CESA. If the Director of the CDFG determines that the Federal Incidental Take Statement is not consistent, then Trinity County will be required to obtain a State take permit pursuant to California Fish and Game Code Section 2081 (b).

North Coast Regional Water Quality Control Board

Section 401 of the Clean Water Act requires that state water quality standards not be violated by the discharge of fill or dredged material into waters of the U.S. The SWRCB, through the NCRWQCB, is responsible for issuing water quality certifications, or waivers thereof, pursuant to Section 401 of the Clean Water Act.

The NCRWQCB regulates point source and non-point source discharges through the National Pollutant Discharge Elimination System (NPDES). NPDES permits are required for storm water discharges from construction sites that

involve more than five acres or that contain a hazardous substance in excess of reportable quantities established by the Environmental Protection Agency (EPA).

1.11.3 LOCAL

Trinity County's Fire Safe Ordinance authorizes the County to approve road construction or reconstruction pursuant to Article 1. Article 2 defines the requirements for Emergency Access, including road width, roadway turnarounds and roadway structures.

The Trinity County Floodplain Management Ordinance, found in section 29.4 of the County Zoning Ordinance, requires a Floodplain Development Permit for projects that alter the Trinity River floodplain on private lands within the jurisdiction of Trinity County. The principal requirement of the permit is certification by a registered professional engineer or architect that construction or replacement of bridges, roadways, and bank slope protection devices will not adversely affect the flood-carrying capacity of any altered portion of the watercourse, and will not cumulatively raise the 100-year floodplain elevations by more than one foot in the project area. The Ordinance also requires notification of adjacent communities, CDFG, the Corps, the NCRWQCB, and the California Department of Water Resources (DWR) prior to any alteration or relocation of a watercourse, and the submission of evidence of such notification to the Federal Insurance Administration and the Federal Emergency Management Agency (FEMA).

The Trinity County Decomposed Granite Grading Ordinance requires a grading permit from the Trinity County Transportation Department prior to construction of new roads or excavation in areas with decomposed granite soils, which includes the Shasta Batholith. This ordinance applies only to private lands under the jurisdiction of Trinity County. It does not apply to federally managed lands. For the Trinity River Bridges Project, the ordinance will only apply to the Salt Flat and Bucktail sites, as the Biggers Road and Poker Bar sites do not have decomposed granite soils.

The hauling of loads over weight, height or width limits on Trinity County roads (such as hauling heavy equipment or oversized bridge components) requires an encroachment permit from the Trinity County Department of Transportation. Work that will modify or encroach on County roads such as the proposed actions at the Biggers Road Bridge (on Steel Bridge Road) or the Bucktail Bridge (on Browns Mountain Road) will also require a Trinity County encroachment permit.

1.12 Legislative and Management History

The following is a brief chronology of the most pertinent legislation, authorities, and management actions that occurred relevant to the Trinity River Basin.

- 1855 - Klamath River Reservation established
- 1864 - Hoopa Valley Reservation established
- 1891 - Hoopa Valley Reservation boundary amendment
- 1938 - Rivers and Harbors Act authorized construction of the CVP
- 1955 - Congress authorized the construction and operation of the TRD
- 1964 - The TRD was completed and fully operational
- 1971 - The Task Force, comprised of federal, state, and local agencies and tribes, was established

- 1976 - Pacific Fishery Management Council (PFMC) established
- 1980 - USFWS prepared EIS relating impacts of TRD to chinook and steelhead declines
- 1980 – Public Law 96-335 – Trinity River Stream Rectification Act
- 1980 – Trinity River designated a California Wild and Scenic River
- 1981 – Trinity River designated a Federal Wild and Scenic River
- 1981 - Interior Secretary's Decision to temporarily increase Trinity River instream flows; USFWS is ordered to initiate 12 year Trinity River Flow Evaluation Study
- 1983 - USFWS prepared EIS for Trinity River Restoration
- 1984 - Trinity River Basin Fish and Wildlife Management Act (PL 98-541)
- 1984 – Trinity River Flow Evaluation (TRFE) started
- 1988 - Yurok Reservation recognized and established
- 1988 – BOR and USFWS establish an office in Weaverville
- 1991 – Interior Secretary's Decision to temporarily increase Trinity River flows to 340,000 af until TRFE completed (Lujan Decision)
- 1992 - Central Valley Project Improvement Act (PL 102-575) (Sec. 3406(b)(23)
- 1992 – Trinity River Water Quality Objectives and Interim Action Plan approved as Clean Water Act standards by the U.S. Environmental Protection Agency (EPA)
- 1994 - EIS initiated for Trinity River Mainstem Fishery Restoration program
- 1995 – BOR/USFWS Weaverville office is closed
- 1996 - Trinity River Basin Fish and Wildlife Management Act (PL 104-43) reauthorized and amended
- 2000 - Record of Decision for Trinity River Mainstem Fishery Restoration issued by Department of Interior
- 2001 - Litigation on Record of Decision, filed in United States District Court for the Eastern District of California, results in issuance of preliminary injunction urging Department of Interior to undertake preparation of Supplemental EIS
- 2003 – United States District Court enters final judgment requiring Department of Interior to prepare Supplemental EIS and invalidating certain aspects of biological opinions issued by National Marine Fisheries Service and the United States Fish and Wildlife Service

Additional details on the legislative and management history can be found in the Trinity River Mainstem Fishery Restoration FEIS/EIR (USFWS et al. 2000).

1.13 Indian Tribes

Secretarial Order No. 3175 states that the DOI, "when engaged in the planning of any proposed project or action, will ensure that any anticipated effects on Indian Trust resources are explicitly addressed in the planning, decision, and operational documents that are prepared for the project." This mandate was reaffirmed in a Presidential directive declaring the sovereign rights of Indian tribes and the government-to-government status of relations between the United States and recognized tribes. Accordingly, this Draft EA/EIR provides a detailed assessment of potential effects on Indian Trust resources and how these effects may impact Indian tribes. Consistent with DOI policy, the

analysis addresses only those tribes of the Klamath/ Trinity Region that are officially recognized by the United States (Pevar 1992)—the Hoopa Valley, Karuk, Klamath, and Yurok. Local unrecognized tribes include the Nor-Rel-Muk Nation (Hayfork/Wintu) (Hayfork) and the Tsnungwe Tribe (Salyer/Burnt Ranch). The Nor-Rel-Muk Nation has an Memorandum of Understanding (MOU) with the BLM that relates to a recognized cultural feature immediately adjacent to the Salt Flat project site.

The Tribal Trust discussion focuses principally on the Hoopa Valley and Yurok Tribes, since, of the recognized Indian tribes of the Klamath/ Trinity Region, they would be most directly affected by the project. It should be understood, however, that the impacts are pertinent to the Karuk and Klamath people since they share a common regional heritage with the Hoopa Valley and Yurok tribes.

1.14 Integration of Related Environmental Review Requirements

In addition to integrating the NEPA and CEQA processes, this document integrates the NEPA/CEQA process with the environmental review and consultation requirements of other relevant federal and state programs. Compliance with the following review and consultation requirements is documented in the Permitting Report (**Appendix E**). The following section provides an overview of the principal environmental statutes that will be integrated into the Draft EA/EIR.

1.14.1 Compliance with Section 401 of the Clean Water Act

Section 401 of the federal Clean Water Act requires that state water quality standards not be violated by the discharge of pollutants into waters of the United Sates, including wetlands (33 USC 1344). Under this section, applicants for a permit to conduct activities that may result in a discharge of pollutants into waters of the United Sates must request and obtain a certification from the state in which the discharge would originate. The NCRWQCB will use the information available in this EA/EIR, the Section 404 permit application and the CDFG Streambed Alteration Agreement to prepare the 401certification.

1.14.2 Compliance with Section 404 of the Clean Water Act

Section 404 of the Clean Water Act authorizes the Corps to issue permits for the discharge of dredged or fill materials into waters of the United States, including wetlands (33 USC 1344). The Corps is authorized to issue either individual or general permits under Section 404. Under its general permit authorization, the Corps has issued a number of permits on a nationwide basis. As long as the activity has complied with the conditions set forth in the applicable nationwide permit, there is no need for a project proponent to apply for an individual permit from the Corps. For several of these nationwide permits, the Corps requires the project proponent to submit a pre-discharge notification to the Corps requesting confirmation that the project has complied with the nationwide permit conditions.

1.14.3 Compliance with the Federal Endangered Species Act (ESA)

Section 7 of the ESA requires federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat for these species. For compliance with Section 7 of the ESA, BOR requested and received from the USFWS a list of federally listed endangered and threatened species that may be present in the project area (**Appendix I**). BOR and the U.S. Bureau of Land Management (BLM) consulted with NMFS concerning project effects to federally- and state-threatened Southern Oregon/ Northern California ESU of coho salmon pursuant to Section 7 of the ESA. The EA/EIR, in conjunction with the Biological Assessment /

Essential Fish Habitat Assessment, will be used by the NMFS as site specific information for development of a bridge project Incidental Take Permit and supporting Biological Opinion, if warranted (**Appendix F**).

1.14.4 Compliance with the National Historic Preservation Act (NHPA)

BOR has formally consulted with the Office of the Historic Preservation (OHP) and the Advisory Council on Historic Preservation (ACHP). This consultation is documented in the Programmatic Agreement between the USFWS, BOR, BLM, Hoopa Valley Tribe, Californian State Historic Preservation Officer (SHPO) and the ACHP regarding implementation of the Trinity River Fishery Restoration (November 8, 2000).

1.14.5 Compliance with Federal Wild and Scenic River Act

The federal Wild and Scenic Rivers Act, Section 7(a) prohibits departments and agencies of the United States from assisting by loan, grant, license or otherwise in the construction of any water resources project that would have a direct and adverse effect on the Outstandingly Remarkable Values (ORVs) for which such river was established.

While the Wild and Scenic Rivers Act does not prohibit development along a river corridor, it does specify guidelines for the determination of appropriate actions within the bed and banks of a Wild and Scenic River that protect or enhance ORVs. As the designated river manager for the Trinity River between Lewiston and Helena, California, BLM must prepare a Section 7 determination on all proposed water resources projects that would affect the free-flowing characteristics of designated river reach. This determination will ensure that the proposed Project does not adversely impact the values for which the river was designated. The Draft EA/EIR will provide the information to support a Wild and Scenic River Act Section 7 Determination.

1.14.6 Compliance with Executive Order 11990 (Wetlands)

Executive Order 11990 is an overall wetlands policy for all agencies managing federal lands, sponsoring federal projects or providing federal funds to state or local projects. The order requires federal agencies to follow "avoidance-mitigation-preservation" procedures with public input before proposing new construction in wetlands and requires federal agencies to avoid impacts on wetlands where practicable.

1.14.7 Compliance with Federal Executive Order 11988 (Floodplain Management)

Executive Order 11988 requires federal agencies to prepare floodplain assessments for proposals located within or affecting floodplains. If an agency proposes to conduct an action within a floodplain, it must consider alternatives to avoid adverse effects and incompatible development of the floodplain.

If the only practicable alternative involves siting of structures in a floodplain, the agency must minimize potential harm to or within the floodplain and explain why the action is proposed in the floodplain. As discussed in Section 3.4, Water Resources, and supporting Hydraulic, Scour and Riprap Sizing Analysis (**Appendix J**) for the project concludes that the proposed project would not constitute a significant encroachment on the base floodplain.

1.14.8 Compliance with Federal Executive Order 12898 (Environmental Justice)

Executive Order 12898 requires federal agencies to identify and address disproportionately high and adverse human health and environmental effects of federal programs, policies, and activities on minority and low-income populations. Federal agencies are required to provide opportunities for input in the NEPA process by affected communities and to evaluate significant and adverse effects of proposed federal actions on minority and low-income

communities during the preparation of NEPA documents. The NEPA scoping process can be used to solicit information on the concerns of minority and low-income populations. If a proposed federal action will not result in significant adverse impacts on minority and low-income populations, the environmental document must describe how Executive Order 12898 was addressed during the NEPA process. For the Project, the County will circulate a public notice in the local newspaper soliciting input from the public regarding potential adverse impact of the project on minority and low-income populations.

CHAPTER 2

Description of Proposed Action and Alternatives

Chapter 2

Description of Proposed Action and Alternatives

This chapter describes the proposed action and associated alternatives considered to modify or replace the existing Salt Flat, Bucktail, Poker Bar, and Biggers Road bridges across the Trinity River. Included in this chapter is a description of the process used by the BOR, the BLM, and the County to evaluate potential alternatives and identify the proposed action and alternatives to be fully analyzed in this EA/EIR. A detailed description of the No-Action Alternative, Proposed Action, and project alternatives is provided, including a detailed account of design criteria, construction criteria and methodologies, and tentative construction schedules.

2.1 Project Overview

The Lead Agencies for the Trinity River Bridges Project EA/EIR considered three (3) alternative configurations at Biggers Road, Poker Bar, and Bucktail per bridge sites and four (4) alternative configurations at Salt Flat bridge site for the purpose of analysis in this EA/EIR. In the evaluation, the No-Action Alternative was considered to be the environmental baseline for purposes of NEPA analysis, while the "existing environment" was considered to be the baseline for CEQA purposes. As a practical matter, this distinction has no real consequence as applied herein, though it sometimes does in situations in which a future No-Action scenario differs significantly from actual existing conditions at the time of document preparation. Alternatives were developed using input from the public, review of preliminary engineering data and considering various social, physical, and biological factors. Pursuant to CEQA requirements, the alternatives were intended to be able to meet most of the basic project objectives ("purpose and need" in NEPA parlance) while substantially lessening or avoiding one or more impacts of the proposed action that, absent mitigation or project features operating as de facto mitigation, might be significant. This environmental document evaluates all alternatives, including the proposed Project and the No-Action Alternative, at an equal level of detail.

This document addresses infrastructure improvements and/or modifications to the four bridges described below and does not address other structures affected by the peak instream flows provided by the ROD. The flow regime used to evaluate the existing bridges spanning the Trinity River between Lewiston and Douglas City are the flows authorized by the December 9, 2002, "Memorandum Decision" issued by Judge Oliver W. Wanger of the United States District Court for the Eastern District of California (U.S. District Court 2002). His decision addressed what he found to be legal deficiencies with the December 19, 2000 ROD issued by former Secretary of Interior Bruce Babbitt, and commanded the preparation of a SEIS to remedy those deficiencies. While that process was underway, he set forth a flow regime to remain in place during the interim period. As set forth on pages 136, 137, and 143 of the Memorandum Decision (U.S. District Court 2002), Secretary Babbitt's ROD would govern flow levels for both critically dry and dry years (368,600 afa and 452,600 afa), with the latter figure operating as a cap for controlled flows even in normal, wet, and extremely wet years. The ROD had provided for 646,900 afa in normal years, 701,000 in wet years, and 815,200 in extremely wet years (See **Appendix A**, Memorandum Decision, page 11). Because it is unclear whether those flows will be reauthorized after completion of a SEIS and new ROD, the flows authorized by

Judge Wanger are deemed to constitute the "existing [hydrological] environment" for CEQA purposes, and are considered part of both the No Project Alternative (for CEQA) and the No-Action Alternative (for NEPA).

2.2 Project Location

The Trinity River originates in the rugged Salmon-Trinity Mountains of northwest California, approximately 10 miles southwest of the town of Weed, California. The river flows generally southward until Trinity and Lewiston Dams impound it. From Lewiston Dam the river flows westward for 112 miles until it enters the Klamath River near the town of Weitchpec on the Yurok Reservation. The Trinity River passes through Trinity and Humboldt counties and the Hoopa Valley and Yurok reservations, draining approximately 2,965 square miles. The Klamath River flows northwesterly for approximately 40 miles from its confluence with the Trinity River before entering the Pacific Ocean. In general, the proposed project focuses on the 10 miles reach of the Trinity River between the Salt Flat Bridge, near the community of Lewiston and the Biggers Road Bridge upstream of Douglas City. The direct, indirect, and cumulative impacts of the project alternatives occur within the Trinity River Basin. Descriptions of each site location are provided below.

The Salt Flat project study area is located within the *Lewiston, California* 7.5' USGS quadrangle, Section 13, Township 33 North, Range 9 West, MDB&M. The Salt Flat Bridge on Salt Flat Road is located approximately 1,000 feet west of Goose Ranch Road and 2.5 miles west of Lewiston, California at RM 107.

The Bucktail project study area is located within the *Lewiston, California* 7.5' USGS quadrangle, Section 3, Township 33 North, Range 9 West, MDB&M. Bucktail Bridge (Br. No. 5C-207) is located about five (5) miles west of Lewiston, California, where it spans the Trinity River near RM 105.

The Poker Bar project study area is located within the *Weaverville, California* 7.5' USGS quadrangle, Sections 33 and 34, Township 33 North, Range 9 West, MDB&M. The existing Poker Bar bridges, located approximately 10 miles downstream of Lewiston Dam, span the Trinity River near RM 102, halfway between the towns of Lewiston and Douglas City, California.

The Biggers Road Bridge project study area is located within the Weaverville, California 7.5' USGS quadrangle, Section 32, Township 33 North, Range 9 West, MDB&M. This bridge is located adjacent to Steel Bridge Road, approximately 3 miles upstream (east) of Douglas City, near RM 97.

2.3 Development of Alternatives

This section describes the alternatives that were developed to modify or replace the existing Salt Flat, Bucktail, Poker Bar and Biggers Road bridges on the Trinity River and to provide operational flexibility to manage the flows associated with the TRD of the CVP (as described in Section 1.6, Purpose and Need for the Action). This section also describes the No-Action condition, which represents the baseline for NEPA purposes. As noted earlier, No-Action conditions and "existing conditions" (a CEQA concept) are essentially the same. To ensure that a reasonable range of alternatives is considered under NEPA and CEQA, the lead agencies developed alternatives that are responsive to the Purpose and Need, and the Goals and Objectives of the Proposed Action and public comments submitted during scoping. In order for proposed alternatives to be carried forward for further consideration, alternatives need to demonstrate the ability to meet most of the basic purposes and objectives of the project.

The selection of potentially feasible alternatives, which will ultimately lead to a preferred alternative, was driven by a number of factors. For an alternative to be considered potentially feasible (and therefore subject to full NEPA and CEQA analysis), it must have the ability to meet most of the purposes and objectives identified for the proposed project. Alternatives that failed to do so were excluded from further consideration (Section 2.5, Alternatives Considered But Eliminated from Further Evaluation).

The initial screening process considered alternatives that met the requirements for the range of flows identified, potential for resource impacts, and engineering limitations at the four bridge locations. This preliminary list of alternatives incorporated input provided at the public hearing and from interested agencies and public participants during the scoping process.

Additional screening criteria were developed to narrow the list of potentially feasible alternatives. The secondary screening process identified alternatives that could achieve the most of the basic project purposes and objectives, and that responded to environmental concerns raised during the scoping process. The following criteria were applied to potential actions at one or more bridge locations.

- **Effectiveness** – methods, materials and performance of bridge systems and construction processes that have documented long-term successful performance under similar circumstances were considered.
- **Implementation** – practical execution, including potential public acceptance issues, permitting and land use issues. Constructability and complexity of maintaining the bridges over time was also considered.
- **Environmental** – impact to environmental resources with emphasis on special-status species, including native anadromous salmonids (both short-term construction-related impacts and long-term operational impacts). Impacts to aquatic habitat and jurisdictional wetlands were considered in the type and location of proposed actions.
- **Cost** – relative comparison of estimated life-cycle cost for each alternative, including capital cost and operation and maintenance cost were considered. Cost was used to identify alternatives that were significantly out of proportion with other alternatives.

The interdisciplinary team evaluated as many as six alternatives per bridge site, according to the criteria outlined above. This evaluation resulted in identifying two action alternatives per bridge site (three for Salt Flat) and the No-Action Alternative for inclusion in this Draft EA/EIR. These alternatives were formulated from public input, engineering feasibility, scientific information, and professional judgment, in a manner consistent with NEPA and CEQA. A summary of the fully analyzed alternatives is presented in the following Chapter 2.4. Analysis of the anticipated impacts associated with each alternative is presented in Chapter 3.

The No-Action Alternative represents ongoing activities and operations and is intended to meet the state *CEQA Guidelines*, Section 15126.6, subdivision (e)(2) as "would be reasonably expected to occur in the foreseeable future if the project were not approved" (CELSOC 2002). As previously discussed, the No-Action (No-Project, CEQA) Alternative is predicated on the conditions described in the December 9, 2002, "Memorandum Decision" issued by Judge Oliver W. Wanger of the United States District Court for the Eastern District of California. In particular, the hydrologic elements authorized in this memorandum will be used as the existing condition (environmental baseline). The No-Action Alternative is described for each site in the following sections.

Chapter 2.5 provides a brief discussion of alternatives that were determined to be infeasible or inconsistent with the purpose and need, and therefore were not analyzed in detail.

2.4 Description of Proposed Action and Project Alternatives

The Project alternatives for each bridge site, including the No-Action Alternative, are described in the following sections. The alternatives discussed below are considered ostensibly feasible and would avoid or substantially lessen at least one of the significant environmental effects of the project. The range of alternatives selected and discussed in this document represents a reasonable array that will provide for meaningful public participation and informed decision-making.

2.4.1 SALT FLAT

No-Action Alternative

Under the No-Action (No Project) Alternative, the BOR, the BLM, and the County would not proceed with replacement of the Salt Flat Bridge. The No-Action (No-Project) Alternative is the existing condition of the bridge and ancillary features at the Salt Flat project site. The following subsection provides a detailed description of the existing features and the associated conditions.

Existing Conditions

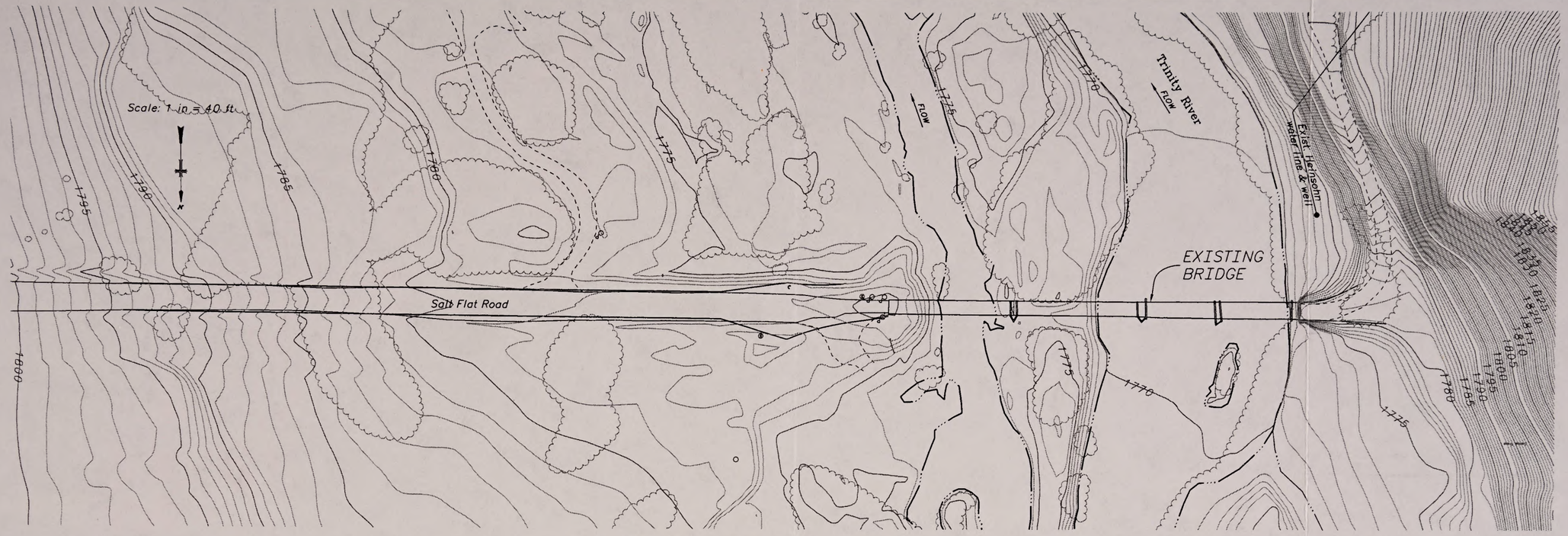
The existing Salt Flat Bridge, located about 2.5 miles west of Lewiston California, spans the Trinity River near RM 107. The bridge is located on Salt Flat Road, about 1,000 feet west of Goose Ranch Road (**Figure 2-1**). The bridge, which was reportedly constructed in the early 1980s to replace a bridge that was washed out, is privately owned. The structure is a single lane, four-span, 272-foot long, 10-foot wide railroad flatcar bridge and serves 27 parcels on the right bank of the river.

For discussion purposes, the four spans are numbered as spans 1 through 4, from left to right, looking downstream. The span lengths are approximately 85.5 feet, 85.5 feet, 52.0 feet and 51.0 feet respectively. The abutment on the left is abutment 1, and the abutment on the right is abutment 2. The piers are numbered pier 1, pier 2 and pier 3, from left to right.

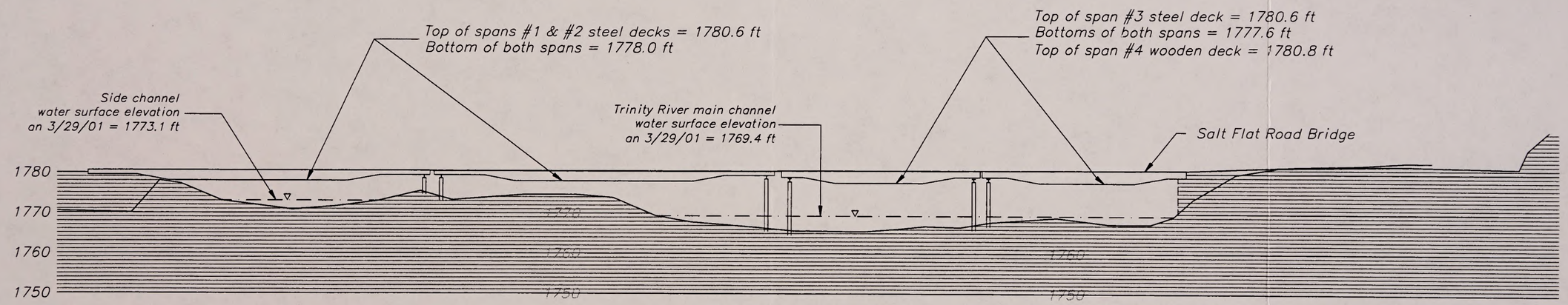
Currently, abutment 1 is not visible. The abutment is obscured by fill or alluvial material that consists of sand, gravel and cobbles. A concrete or steel support may be present, but has not been examined as it is completely covered. A concrete retaining wall/steel pile combination forms abutment 2. The material behind the retaining wall is coarse-grained fill consisting of gravel and cobbles.

Steel H-pile trestle-type piers support the bridge superstructure. Piers 2 and 3 each have a v-shaped debris diverter constructed with steel plates and beams on the upstream nose. River flows may have scoured several feet deep into the alluvium to expose the steel piles beneath the debris deflectors. Alternatively, the diverters may have been constructed for high flows only, leaving the lower piling exposed at the time of construction.

The existing piers are assumed to have been constructed in 1984 when the railroad flatcar bridge was installed. However, the right abutment appears to be much older. According to the Salt Flat Property Owners Association, the bridge has been subjected to heavy loads, such as loaded ten-wheeled dump trucks and concrete trucks on a regular



Salt Flat Bridge Existing Site Layout



Salt Flat Bridge Existing Profile

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT – CALIFORNIA
TRINITY RIVER DIVISION
TRINITY RIVER MAINSTEM FISHERY RESTORATION

TRINITY RIVER BRIDGES

SALT FLAT BRIDGE
PROPOSED ACTION – DOWNSTREAM TRUSS
PLAN, PROFILE AND ROAD SECTIONS

DESIGNED ANNE MCDANIEL CHECKED Name
DRAWN ANNE MCDANIEL TECH. APPR. Name
PEER REVIEW Name
WATER CONVEYANCE GROUP DENVER, COLORADO

F:\Projects\10006 - Trinity River Bridge Replacement\GIS\Working_CAD_Files\Salt_Flat_Existing.dwg Source: U.S. Bureau of Reclamation 03-25-03 tkoehler

North State Resources, Inc.

Trinity River Bridges Project

Figure 2-1
Salt Flat Bridge Existing Site Layout & Profile

basis each spring/summer for property and roadway improvements. No load rating has been developed for the structure.

The railroad flatcars used for spans 1 and 2 (left-side) are of the same type, and the ones used for spans 3 and 4 are the same type. The railroad flatcar depths are approximately 39 inches (3.25 feet) in depth, with a low chord elevation of 1776.6 feet above mean sea level (msl) along spans 3 and 4.

The decking for left-side spans 1 and 2 consists of ¼ -inch thick steel plate. Decking on right-side spans 3 and 4 consists of three-inch-wide by four-inch-high wood beams, placed perpendicular to the direction of traffic. These beams are about 10 feet long and are spaced at about 4 inches apart. Two rows of four four-inch by 12-inch-wide wood planks (running boards) are placed longitudinally on top of the deck. Spans 1 and 2 have a low steel curb, approximately eight inches high, on the outer edges. Steel posts and wire rope form a railing along both sides between spans 3 and 4.

The river is divided during low flows, separated by a 70-foot-wide channel bar deposit. The right channel is the main channel, and is about 110 feet wide where it passes under bridge spans 3 and 4 and the right side of span 2. The left channel is about 30 feet wide where it passes under span 1. The left channel was constructed by the BOR for fish habitat in the early 1990s.

The left approach roadway is gravel surfaced, approximately 16-feet wide and crosses the flood plain from its intersection with Goose Ranch Road. The left horizontal roadway alignment is tangent to the bridge. Vertical alignment is on a declining grade towards the bridge. The right approach roadway is also gravel surfaced and slopes upward across a cut slope leading away from the bridge. The right horizontal alignment is on a sharp horizontal left curve immediately adjacent to the right bridge abutment. Salt Flat Road exists within an easement controlled by the property owners group. The existing left approach grade is approximately 7.65 percent, and the existing grade on the right approach is approximately 15 percent.

There are no overhead utilities near the bridge and there do not appear to be any underground utilities in the vicinity of the bridge. There is a well approximately 100 feet upstream from the left approach. A private-service waterline follows the upstream edge of the road easement along the left approach. Another well exists approximately 65 feet downstream of the right abutment. Water lines extending from the well may lie beneath the existing road. **Table 2-1** provides elevation information for the No-Action Alternative.

TABLE 2-1

NO-ACTION ALTERNATIVE

APPROACH, TOP OF DECK, AND TOP OF STRUCTURE ELEVATIONS – SALT FLAT BRIDGE

Structure	Left Approach/Top Of Deck Elevation (ft)	Low Chord Elevation (ft)	Right Approach/Top Of Deck Elevation (ft)	Top Of Structure Elevation (ft) [a]
Existing	1780.6	1777.6	1780.8	1783.5

Notes: [a] Elevation shown is top of bridge rail for the existing bridge

Hydraulics

A Corps Hydraulic Engineering Center River Analysis System (HEC-RAS) hydraulic model was developed and calibrated to match measured water surface elevations upstream of the existing bridge. **Table 2-2** shows the computed water surface elevations for the anticipated flows at the site with the existing bridge in place. Additionally, a calculation of the maximum, unobstructed flow that can pass under the existing bridge is included.

TABLE 2-2

SALT FLAT BRIDGE FLOW RATE AND WATER SURFACE ELEVATIONS, RM = 106.94

EXISTING BRIDGE INCLUDING SUPERSTRUCTURE

TRINITY DAM DISCHARGES PLUS TRIBUTARY FLOWS

Flow description	Flow Event	Flow Rate (cfs) LC = 1777.6 TOD = 1780.6	Water Surface Elevation (msl)
Maximum unobstructed flow	Q_{max}	7,750	1777.6
Return Period Peak Flow (Annual with ROD) [a]	Q_{50} Q_{100}	11,700 12,900	1780.0 1780.4
Maximum Controlled-Flow Release [b]	Q_{MCR}	14,900	1781.1
Estimated flow during 1/1/97 [c]	Q_{1997}	11,000	1779.5
Typical maximum flow between July 22 to October 15 of each year [d]	Q	450	1770.1

Notes:

[a] Return Period Peak Flow – Annual with ROD – Combined winter and spring considering all 5 ROD water year type. Includes a possible 11,000 cfs release from Lewiston Dam in the spring.

[b] Maximum Controlled-Flow Release – 13,750 cfs is the maximum controlled release from Trinity Dam. Combining this flow with 100-year May/June peak tributary flow gives the flow value shown.

[c] Scott McBain of McBain and Trush provided flow estimates for the January 1, 1997 flood event.

[d] Lewiston Dam releases to the Trinity River based on the ROD. 450 cfs is the proposed flow release at Lewiston Dam between July 22 and October 15 of each year. 300 cfs is the proposed flow release at Lewiston Dam between October 16 and April 15 of each year.

LC = Bridge low chord, or bottom of beam elevation at lowest point under the bridge.

TOD = Top of Deck elevation. When top of deck elevation varies across the length of the bridge, the value shown in the table is the lowest top of deck elevation.

RM = Trinity River mile.

msl = Elevation above mean sea level (feet).

Q = Flow rate (cfs)

As shown on **Table 2-2**, the existing bridge low chord elevation is 1777.6 feet msl, and the top of deck elevation is 1780.6 feet msl. The hydraulic analysis indicates that the maximum unobstructed flow is 7,750 cfs, with a corresponding water surface elevation of 1777.6 msl. By this analysis, any flows in excess of 7,750 cfs will back up behind the bridge superstructure (upstream).

The hydraulic analysis includes an estimate of 11,000 cfs, upstream of Rush Creek, for the January 1, 1997 flood flow. According to eyewitness accounts, the 1997 flood overtopped the bridge deck at Salt Flat by one to three inches. According to the HEC-RAS model, the 1997 flood flow approaching the bridge on the upstream side has a water surface elevation of 1779.5 feet msl, approximately 1.1-feet below the top of the bridge deck. The HEC-RAS analysis suggests that the water surface drawdown, due to the bridge contraction, results in the entire flow passing underneath the bridge as pressure flow. Though the bridge backed up the flow in the model, the bridge was not overtopped during this simulation. It was determined that the results of the hydraulic model fall within allowable

accuracy limits considering: (1) the accuracy of the model calibration (+/-0.5 feet for 5,000 cfs) and, (2) the approximate nature of the January 1, 1997 flood magnitude estimation.

Scour Analysis

The DWR collected cross-section survey data in the Trinity River from Lewiston Dam downstream to the Trinity River North Fork confluence prior to the January 1, 1997 flood. Subsequent cross-section data was collected during the 1999 to 2001 time-period. Comparison of the pre-1997 and post-1997 cross-section profiles suggests that no significant long-term channel degradation resulted from the 1997 flood event. Localized scour may have occurred during this event, but did not cause failure of the piers or abutments. The data suggests that sediment from the upstream bed filled in scour holes that may have developed at or near the bridge during the 1997 event.

At the existing Salt Flat Bridge, computed scour depths for a 12,900 cfs discharge were 12.2 feet (El. 1765 feet[1] msl) at the left abutment toe, 9.9 feet (El. 1756 feet msl) at the base of the pier in the main channel, and 9.8 feet (El. 1759 feet msl) at the toe of the right abutment. Geologic data at Salt Flat Bridge suggest that granite bedrock exists across the entire cross section at depths up to 30 feet below the exposed ground surface. Near the left abutment, drill logs estimate 12 to 14 feet of fill and alluvial material on top of the continuous granite surface resulting in an approximate bedrock elevation of 1764 feet msl. Depth of alluvium in the channels underneath the bridge varies between about 6 feet in the low flow fish habitat channel (left of the main channel) to less than 1 foot in the main channel bed. Beneath the existing pier in the main channel, the elevation of competent bedrock is estimated to be about 1763 feet msl. Depth to bedrock near the right abutment is estimated between 20 and 30 feet (estimated bedrock elevation 1751 feet msl).

The granite bedrock would likely control the scour depth at the pier near the center of the main channel. Scour at the left abutment would either be controlled by existing bedrock or would stop just above it. At the right abutment, scour would probably cease before the elevation of the bedrock layer was reached for a flow of 12,900 cfs.

The presence of shallow bedrock and a large, flat, low left overbank area in the vicinity of the bridge would partially counteract the tendency of the river to scour during high flow events. The bridge abutments may be vulnerable to scour, but the channel bed would be protected by shallow granite bedrock. The piers under the bridge may be founded on bedrock, but their depth is unknown.

Proposed Action (Replacement Slightly Downstream of Existing Alignment with a Two-Span Structure)

The Proposed Action bridge at Salt Flat will be constructed approximately four to 44 feet downstream (centerline to centerline) of the existing left and right bridge abutments, respectively (**Figure 2-2**). The new alignment will diverge approximately eight degrees from the existing bridge alignment. Because the new left abutment will be constructed nearly at the location of the existing left abutment, the first flatcar span of the existing bridge will be "rotated" and modified to provide temporary construction access for the property owners. The bridge will be constructed on private property, and will be owned collectively by the Salt Flat Property Owners Association. The bridge type is a two-span prefabricated steel truss with reinforced concrete deck. The bridge will be approximately 280 feet long (two 140-foot spans), with an 18-foot clear roadway width, designed to carry HS20 loading. New structures designed for HS20

[1] Elevations of bottom of scour holes based on elevations of abutment toes and pier bases at existing ground level taken from preliminary design drawings. Actual scour hole bottom elevations will depend on as-built elevations.

vehicles are capable of carrying any legal load vehicle and do not require posted limits. The superstructure and guardrail will be fabricated with weathering steel. (High-strength weathering steel develops a surface layer that protects it from corrosion and eliminates the need to maintain standard painted coatings). The Proposed Action requires raising the left road approach approximately 4 feet to provide sufficient hydraulic freeboard over the river.

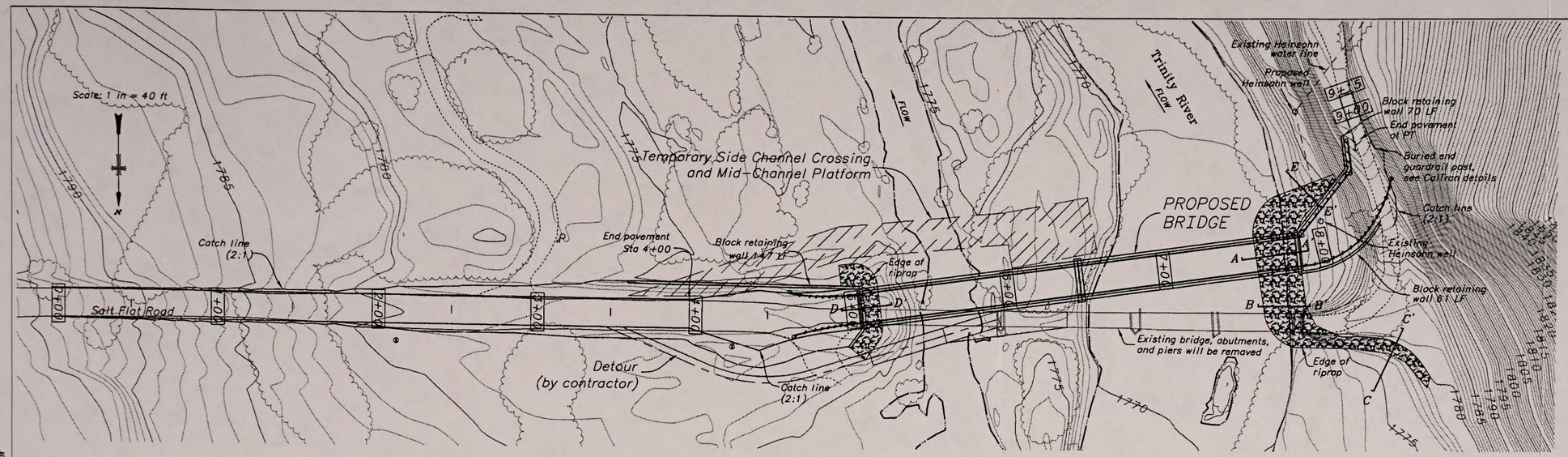
The increased span length will provide a wider flow area under the bridge, reducing the backwater surface elevations and water velocities. This will result in a more natural condition than the existing constricted channel. The left abutment and single column bent supporting the superstructure will be located outside of the active low-flow channel (Q = 450 cfs). This will allow the contractor to minimize construction activity in the active low-flow channel for these components. The right abutment will be founded on 2.5-foot-diameter drilled shafts. Because of the height of the abutment and bridge above the existing terrain, a 15-foot-high (approximate) embankment will be constructed around the abutment. The embankment will be constructed of compacted earth materials retained behind a segmental (retaining) wall. A 1.5:1.0 riprap slope will descend from the wall to protect the embankment and wall from hydraulic scour. The slope will be faced with well-graded, 18-inch maximum diameter, angular riprap underlain by geotextile fabric. The riprap slope will extend 15 to 20 feet into the active low-flow channel for a length of about 80 feet, parallel to the channel bank. Riprap will be carefully placed using a combination of mechanical and hand-methods (not dumped). The toe of the riprap slope has been designed such that no excavation in the channel is required for placement. It is estimated that right abutment riprap placement in the channel may take up to 5 days to complete.

The single column bent will be constructed on the mid-channel bar above the active low-flow channel elevation. The contractor will be required to provide access to the mid channel bar by constructing a temporary crossing that provides a stable route for equipment and contractor personnel. The crossing will minimize impacts to beneficial uses, including aquatic organisms and domestic and agricultural water supplies. The temporary crossing will be constructed by placing and contouring spawning gravel in the channel to provide an adequate base for placement of steel landing mats (similar to temporary military runway matting).

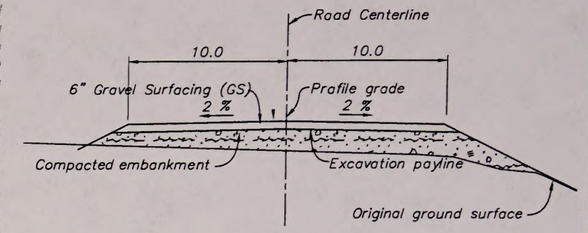
The mats may be placed flush to the channel bottom, approximately 1 foot below the low-flow water surface elevation and will extend up the channel banks to an elevation providing approximately 3 feet of freeboard above the low-flow water surface elevation. The mats may remain in place until removed during the subsequent in-channel construction season (June 15 to September 15).

Spawning gravel gradation will be within the following ranges: (Screen Size/Percent passing by dry weight) 5-inch/100%, 4-inch/85-90%, 2-inch/20-25%, 1/2-inch/0-5%, 1/4-inch/0%. The gravel will consist of hard, dense, and durable particles of river run, well-rounded materials. Gravel will be washed to meet or exceed a cleanness value of 85 according to California Department of Transportation (Caltrans) test #227 specifications.

The bent will be a 3.5-foot diameter column anchored to bedrock in one 3.5-foot diameter drilled shaft. It will have a small "footprint," impacting the least amount of area, and will be relatively quick to install. It is estimated that a working platform with an area 35-foot-wide by 55-foot-long (+/- 1900 ft^2) will be needed for equipment setup, access for bent construction and crane operation. The working platform will be constructed using cut-and-fill methods with existing site materials and/or specified spawning gravels. Dump trucks and earthmoving equipment may be used to construct the mid-channel bar platform. Bent construction will be accomplished using standard equipment and procedures based on types of equipment available. The reinforced concrete abutments and wingwalls will be founded on drilled shafts anchored in bedrock.



Salt Flat Bridge Proposed Site Layout



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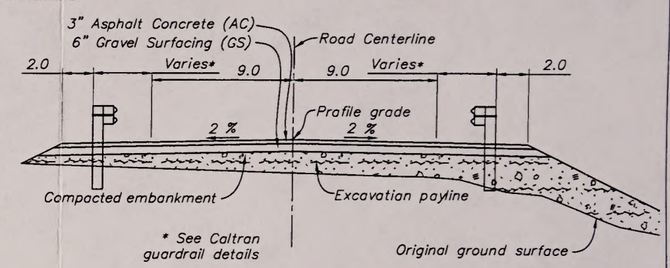
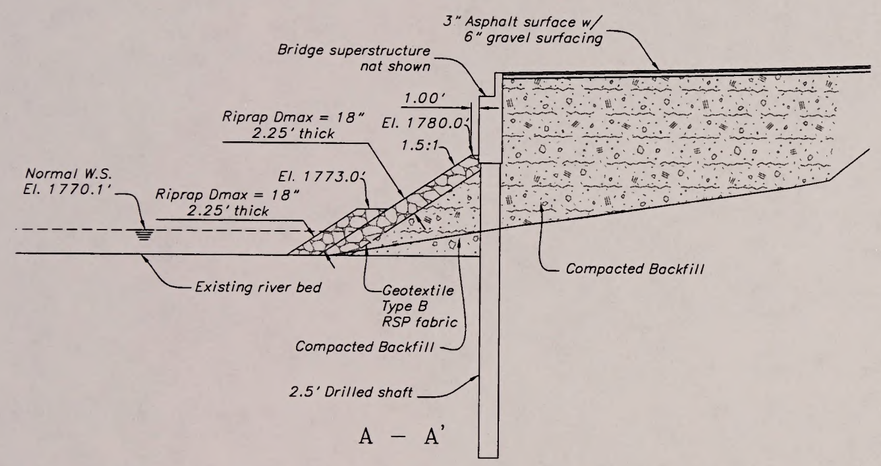
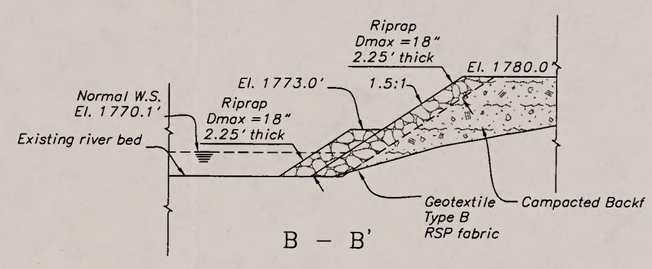


STA 4+00 TO 5+10 & STA 7+80 TO 8+74.76



A – A'



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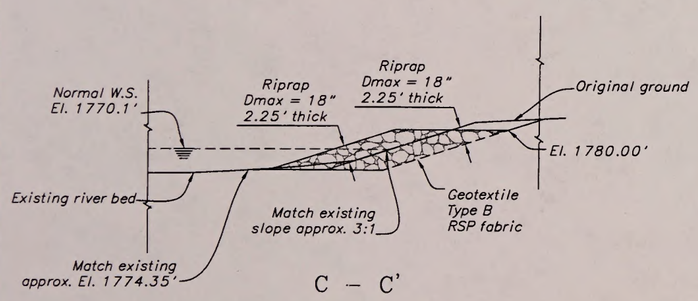
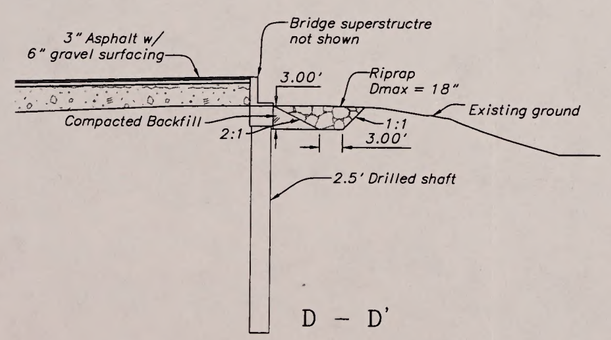
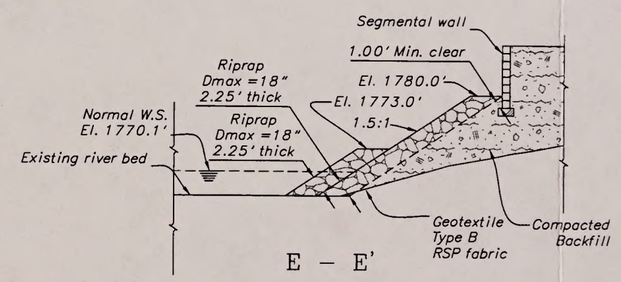


C – C'



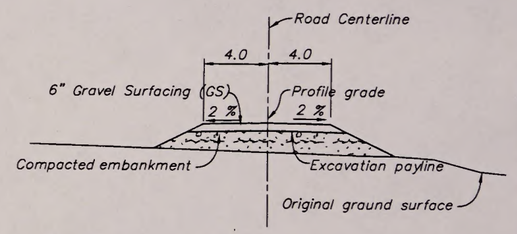
D – D'



E – E'

Salt Flat Bridge Proposed Profiles

(No Scale)



STA 8+74.76 TO 9+15

Typical Road Sections

(No Scale)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT – CALIFORNIA
TRINITY RIVER DIVISION
TRINITY RIVER MAINSTEM FISHERY RESTORATION

TRINITY RIVER BRIDGES

SALT FLAT BRIDGE

PROPOSED ACTION – DOWNSTREAM TRUSS
PLAN, PROFILE AND ROAD SECTIONS

DESIGNED ANNE MCDANIEL CHECKED Name
DRAWN ANNE MCDANIEL TECH. APPR. Name
PEER REVIEW Name
WATER CONVEYANCE GROUP DENVER, COLORADO

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North State Resources, Inc.

Trinity River Bridges Project

Figure 2-2
Salt Flat Bridge Proposed Action
Site Layout & Profile

The contractor will utilize the mid-channel bar platform for bent construction and for positioning a crane to lift the bridge superstructure in place (**Figure 2-2**). It is anticipated the superstructure will be installed during the fall season after the in-river construction period has ended. Side channel crossing to access the platform will be kept to a minimum and is anticipated to occur roughly 10 to 20 times for each construction component (i.e., bent and superstructure installation). Vehicles crossing the side channel may include: earthmoving equipment, crane(s) and trucks. The contractor will be required to clean vehicles prior to crossing the side channel. Staging areas for construction will be located immediately upstream or downstream of the existing left abutment or may be located upstream on private property approximately 200 feet upslope from the left abutment.

All material and water used for drilling operations will be contained and disposed of at an approved off-site disposal site. Make-up water pumped from the river will pass through a screen at the inlet with maximum ¼-inch openings and a maximum intake velocity of 0.8 feet-per-second. The contract specifications will prohibit discharge of cement fines, drilling fluids, contaminated water or other construction byproducts. Slope protection measures will be implemented at abutments and constructed slopes to provide erosion protection from high flows.

Demobilization procedures will include clean up of all construction debris, fine-grading and contouring to "blend" new grades to existing grades and revegetation where required by final design and/or permits.

Design Criteria

The following documents were referenced to develop the bridge design:

- American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets* (Fourth Edition, 2001);
- AASHTO *Standard Specification for Highway Bridges* (16th Edition, 1996, with Interims and Revisions by Caltrans);
- Caltrans and Federal Highway Administration (FHWA) bridge planning and design manuals;
- Trinity County Transportation Department Design Guidelines, policies and requirements;
- Trinity County's Fire Safe Ordinance;
- Trinity County Decomposed Granite Grading Ordinance
- *Estimation of 50-and 100-Year Tributary Accretion Floods; Lewiston Dam to Treadwell Bridge, Trinity River, California*, McBain and Trush, April 30, 2002;
- *Trinity River Restoration Program – Trinity River Bridge Hydrologic Analysis, Draft Report,* BOR Technical Service Center, April 2003; and
- *Trinity River Restoration Program, Trinity River Bridges: Hydraulic, Scour, and Riprap Sizing Analysis, BOR Technical Service Center, April 9, 2003.*

The AASHTO design vehicle, HS20-44, is a three-axle vehicle weighing a total of 36 tons. Structures designed for the HS20-44 design vehicle are capable of carrying any legally loaded vehicles allowed to travel on highways without a permit.

Hydraulics

A HEC-RAS hydraulic model was developed and calibrated to match measured water surface elevations upstream of the existing bridge. The Proposed Action replaces the existing bridge with a new bridge immediately downstream. To obtain design water surface elevations for the range of anticipated flows, a HEC-RAS model was created to simulate a new bridge at the downstream location. **Table 2-3** lists the anticipated flows and corresponding water surface elevations for the proposed bridge structure.

TABLE 2-3
FLOW DISCHARGES AT SALT FLAT BRIDGE @ RM = 106.94
NEW BRIDGE UPSTREAM OR DOWNSTREAM OF EXISTING BRIDGE
TRINITY DAM DISCHARGES PLUS TRIBUTARY FLOWS

Flow description	LC = 1781.5 TOD = 1784.0 (cfs)	Water Surface Elevations (ft)
Return Period Peak Flow (Annual with ROD)[a]	Q_{50} = 11,700 Q_{100} = 12,900	El. = 1779.4 El.= 1779.9
Maximum Controlled - Flow Release [b]	Q_{MCR} = 14,900	El. = 1780.6
Estimated flow during 1/1/97 [c]	Q_{1997} = 14,900	El. = 1779.0

Notes:

[a] Return Period Peak Flow – Annual with ROD – Combined winter and spring considering all 5 ROD water year type. Includes a possible 11,000 cfs release from Lewiston Dam in the spring.

[b] Maximum Controlled-Flow Release – 13,750 cfs is the maximum controlled release from Trinity Dam. Combining this flow with 100-year May/June peak tributary flow gives the flow value shown.

[c] Scott McBain of McBain and Trush provided flow estimates for the January 1, 1997 flood event.

[d] Lewiston Dam releases to the Trinity River based on the ROD. 450 cfs is the proposed flow release at Lewiston Dam between July 22 and October 15 of each year. 300 cfs is the proposed flow release at Lewiston Dam between October 16 and April 15 of each year.

LC = Bridge low chord, or bottom of beam elevation at lowest point under the bridge.

TOD = Top of Deck elevation. When top of deck elevation varies across the length of the bridge, the value shown in the table is the lowest top of deck elevation.

RM = Trinity River mile.

msl = Elevation above mean sea level (feet).

Q = Flow rate (cfs)

Using the Q_{50} water surface elevation of 1779.4 feet, 2 feet of freeboard, and a 2.5-foot superstructure depth results in a low-chord elevation of 1781.4 feet and a TOD elevation of 1783.9 feet. The analysis indicates the new bridge will pass the Return Period Peak Flow (Q_{100} = 12,900 cfs), and the Maximum Controlled-Flow Release (Q_{MCR} = 14,900 cfs), without obstruction.

Scour Analysis

The DWR collected cross-section survey data in the Trinity River from Lewiston Dam downstream to the Trinity River North Fork confluence prior to the January 1, 1997 flood. Subsequent cross-section data was collected during the 1999 to 2001 time-period. Comparison of the pre-1997 and post-1997 cross-section profiles suggests that no significant long-term channel degradation resulted from the 1997 flood event. Localized scour may have occurred during this event, but did not cause failure of the piers or abutments. The data suggests that sediment from the upstream bed filled in scour holes that may have developed at or near the bridge during the 1997 event. The maximum scour depth and lowest scour elevation for the proposed bridge (280-foot bridge opening with a single 4-foot diameter cylindrical pier) occurs at the pier base. For 12,900 cfs, the calculated depth of scour at the base of the pier of the

proposed bridge was 8.3 feet, resulting in an elevation of 1764 feet msl at the bottom of the scour hole. At the toe of the right abutment, the computed scour depth for 12,900 cfs was 6.6 feet, resulting in a scour hole bottom elevation of 1769 feet msl. The water surface never reached the left abutment for the proposed bridge so no local scour was estimated there.

According to geologic estimates and drill hole data from the BOR at the Salt Flat Bridge site, the proposed bridge structure will be anchored to a continuous competent rock layer. The structure will be anchored at the following elevations; approximately 1755, 1763, and 1750 feet msl, at the proposed left abutment, pier, and right abutment respectively. These elevations are at or below the bottom of the potential scour holes for the proposed bridge. This means that the computed bridge scour would not likely be controlled by the existing competent granite layer but rather by the thickness and grain size distribution of the overlying bed material. Abutment and pier foundations driven into the competent rock layer would provide a factor of safety against structural undermining and erosion that might occur during future flood events.

Alignment and Design Speed

The design speed for the approaches and the bridge is 15 mph. The proposed raised roadway alignment from the left approach follows the existing alignment. A 500-foot radius horizontal curve transitions the roadway alignment to the new bridge alignment. The centerline of the new bridge is approximately 4 feet downstream of the left abutment and 44 feet downstream of the right abutment. The bridge begins at Station 5+10 (left side of the river) and ends at Station 7+90 (right side of the river). A horizontal curve with a 45-foot radius ties the new road alignment to the existing road alignment beyond the right approach. The proposed alignment is approximately 920 feet long.

Roadway Approaches

The roadway profile design is based on Caltrans and FHWA guidelines for 2-feet of hydraulic freeboard above the 50-year flow event and the ability to pass both the 100-year flow event and the maximum predicted flow (Maximum Controlled-Flow Release, see **Table 2-3**). Therefore, the minimum low-chord elevation based on the HEC-RAS hydraulic model is 1781.4 feet msl. With a superstructure depth of 2.5 feet, the resultant minimum deck elevation is 1783.9 feet msl (approximately 4.0 feet above the existing left approach).

The proposed vertical alignment (left) descends at a 7.4 percent grade from Goose Ranch Road towards the bridge. A 100-foot vertical curve, beginning at station 1+25 reduces to the grade to 0.0 percent with an elevation of 1,781.5 feet msl. The alignment continues level for approximately 154 feet (Station 3+79) where it transitions to a 2.35 percent ascending grade through a 50-foot vertical curve. The proposed bridge begins at Station 5+10 and continues on an ascending 2.35 percent grade. The bridge ends at Station 7+90. An 80-foot vertical curve from Station 8+10 transitions the right vertical profile from 2.35 percent to the existing roadway grade of 9.23 percent (Station 8+10 to 8+90). The proposed bridge and roadway require approximately 2,300 cubic yards of imported embankment material.

The new bridge and roadway profile will be designed to provide adequate sight distance in accordance with Caltrans and FHWA standards. To meet 15 mph design speed requirements, the right approach requires a horizontal curve with a 45-foot radius. The bridge will have an 18-foot clear roadway width and provide two 9-foot lanes. The total structure width including the truss members is approximately 22 feet. **Table 2-4** shows top of approach, top of deck, and top of structure elevations for the Proposed Action. Typically, approach road elevations are the same as the top of bridge deck elevations.

TABLE 2-4

APPROACH, TOP OF DECK, AND TOP OF STRUCTURE ELEVATIONS – SALT FLAT BRIDGE

Structure	Low chord elevation (ft)	Left Approach/top of deck elevation (ft)	Right approach/top of deck elevation (ft)	Top of Structure elevation (ft) [a]
Proposed Action	1781.4	1783.9	1790.6	1797.0

Notes: [a] Elevation shown is top of truss for the Proposed Action.

Bridge Replacement

For the Proposed Action, the replacement bridge will have an 18-foot clear roadway width and provide two 9-foot lanes. The total structure width including the truss members is approximately 22 feet.

Slope Protection

Slope protection riprap will be provided at both abutments, and will be sized such to prevent scour. The limits and size of slope protection will be shown on the final drawings.

Drainage

The proposed bridge and roadway will have a crowned cross section, which will provide sufficient gradient for drainage of surface water. Each approach will include an asphalt apron to receive mud and water from vehicles approaching the bridge, minimizing introduction of contaminated water or sediment to the stream. Drainage of the bridge deck will be designed to prevent direct discharge of stormwater from the deck to the live stream.

Right-of-Way

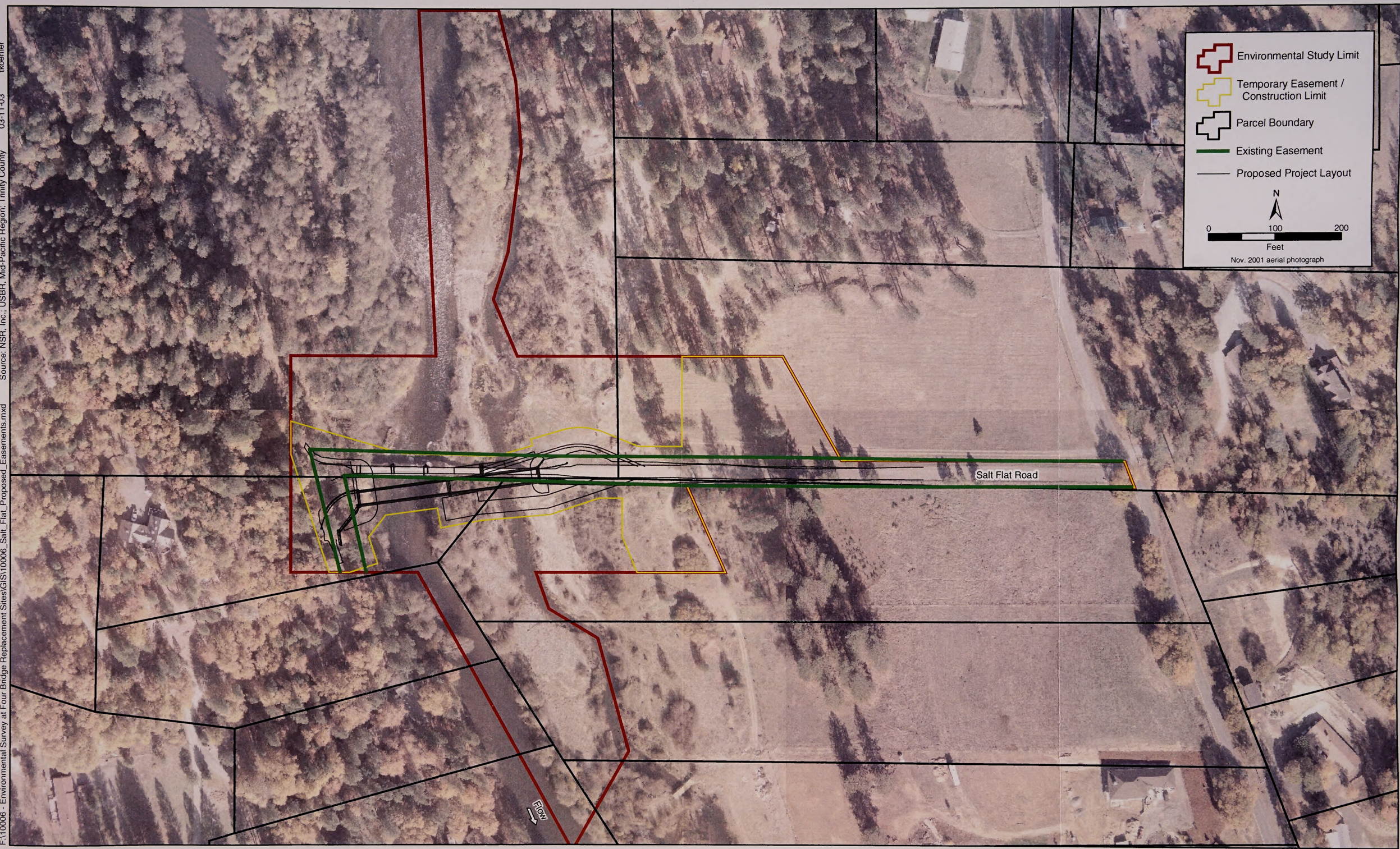
The existing bridge and the Proposed Action bridge are both located on private property. Additional easement(s) downstream will be required to accommodate the proposed bridge, roadway alignment, and approach embankments. The BLM will require a ROW grant for fill slope encroachment on the upstream side of both abutments. Temporary construction easements on both sides of the proposed bridge will be necessary for construction activities. The recommended temporary construction easements, existing easement limits, and existing property lines are depicted in **Figure 2-3.** Specifications will require that clearing and grubbing of vegetation be kept to a minimum.

Utilities

No overhead utilities were observed and there do not appear to be any underground public utilities in the bridge vicinity. Utilities that may be impacted by the Proposed Action include the private service well and water lines along the north edge of Salt Flat Road and the well located south of the right (west) abutment. Portions of the service lines may need to be relocated. The well located near the right abutment will be relocated downstream beyond the abutment footprint as shown on **Figure 2-3**. Trinity County does not expect this project to impact the facilities of the Fire District, Water District, Public Utilities District, or telephone service. Future utility access (conduits) can be attached to the steel truss members of the new bridge structure.

Bridge Railing

Appropriate signs, including speed limit and private road access, will be added on each roadway approach. Approach guardrails will be constructed at both ends of the bridge. Bridge railing will be constructed of weathering steel



F:\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Salt_Flat_Proposed_Easements.mxd Source: NSR, Inc.; USBR, Mid-Pacific Region; Trinity County 03-11-03 tkoehler

North State Resources, Inc.

Trinity River Bridges Project

Figure 2-3
Salt Flat Bridge Proposed Action
Construction Limits & Easements

supported by timber posts. Railings will conform to the full-scale crash-test criteria Test Level 2 (TL-2) established in the National Cooperative Highway Research Program (NCHRP) Report #350. These criteria require TL-2 for roadways with design speeds of 25 mph.

Construction Criteria and Methods

Specifications

Construction specifications will be developed by the BOR, and will meet Caltrans Standard Specifications, and the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects.

Construction Process Overview

The list of construction activities provided below is not intended to be a precise or comprehensive construction schedule. Some of these construction processes may temporarily affect property owner access.

- Modify and rotate first span of existing bridge at left abutment
- Construct engineered fill slope and rip-rap at right abutment, including in-channel excavation
- Construct staging areas (level area for equipment set up, access and material storage) for installing drilled shafts for abutments and bent
- Construct temporary crossing over low flow channel to access bent location
- Drill shafts
- Construct formwork for abutments and bent
- Place reinforcement and concrete
- Assemble and erect prefabricated bridge
- Construct roadway approaches and tie into existing roads
- Remove existing railroad flatcar bridge superstructures
- Install slope protection as required
- Install spawning size gravel access ramps to existing in-channel piers
- Remove existing bridge abutments and piers
- Fine-grading and additional slope protection or revegetation

In-River Construction

The left abutment and single column bent that will support the superstructure will be located outside of the active low-flow channel (Q = 450 cfs). This will allow the contractor to access and install the supports without working in the active low-flow channel. The engineered fill slope and riprap associated with right abutment foundations will encroach slightly beyond the riverbank. The single column bent will be constructed on the mid-channel bar above the active low-flow channel. The contractor will be required to access to the mid channel bar by constructing a temporary crossing that provides a stable route for equipment and contractor personnel (**Figure 2-3**). The crossing will minimize

impacts to beneficial uses, including aquatic organisms and domestic and agricultural water supplies. Construction of the temporary crossing may necessitate use of an excavator and a dozer.

The temporary crossing will be constructed by placing and contouring spawning gravel in the channel to provide an adequate base for placement of steel landing mats (similar to temporary military runway matting). The mats may be placed to provide approximately 1 foot of water depth in the active low-flow channel and will extend up the channel banks to an elevation providing approximately 3 feet of freeboard above active low-flow water surface elevation. The mats may remain in place until removed during the subsequent in-channel construction season (June 15 to September 15). The contractor will utilize mid-channel bar platform for bent construction and for craning the bridge superstructure in place. It is anticipated the superstructure will be placed in the fall/winter season after the in-river construction period has ended. Side channel crossing to access the platform will be kept to a minimum and is anticipated to occur roughly 10 to 20 times for each construction component (i.e. bent and superstructure installation). Vehicles crossing the side channel may include: earthmoving equipment, crane(s), and trucks. The contractor will be required to clean vehicles prior to crossing the side channel.

The right abutment will be founded on 2.5-foot-diameter drilled shafts. Because of the height of the abutment and bridge above the existing terrain, a 15-foot high (approximate) embankment will be constructed around the abutment. The embankment will be constructed of compacted earth materials retained behind a segmental (retaining) wall. A 1.5:1.0 riprap slope will descend from the wall to protect the embankment and wall from hydraulic scour. The slope will be faced with well-graded, 18-inch-maximum diameter, angular riprap underlain by geotextile fabric. The riprap slope will extend 15 to 20 feet into the active low-flow channel for a length of about 80-feet parallel to the channel bank. Riprap will be carefully placed using a combination of mechanical and hand-methods (not dumped). The toe of the riprap slope has been designed such that no excavation in the channel is required for placement. It is estimated that right abutment riprap placement in the channel may take up to 5 days to complete.

Depending on contractor methods, demolition and removal of piers 2 and 3 may require installation of in-channel access ramps extending from the right and left banks to the piers. Ramps will be constructed similar to the mid-channel bar crossing described above. The in-channel ramps/crossings will be constructed upstream of the existing bridge and will cross the side channel and extend from the left and right banks to a point at or near piers 2 and 3. The ramps will be constructed of specified spawning-size gravels and placed with an upper surface approximately one foot below the active low-flow water surface elevation. Estimated quantity of gravel is approximately 25, 35, and 100 cubic yards for the low-flow channel crossing, left bank and right bank ramps, respectively. Landing mats may be utilized on the ramp surfaces if necessary to support the equipment used. After demolition, the ramp gravel will be distributed/contoured over the adjacent channel bottom.

Demolition and removal of piers 2 and 3 may require installation of in-channel access ramps extending from the right and left banks to the piers, depending on contractor methods. Any in-channel ramps/crossings will be constructed upstream of the existing bridge and will cross the side channel and extend from the left and right banks to a point at or near piers 2 and 3. The ramps will be constructed of clean, washed spawning-size gravels and placed with an upper surface approximately 1 foot below the active low-flow water surface elevation.

Any in-river construction measures which are planned for implementation outside of the June 15th to September 15th dry-season construction window will have all potential salmonid spawning habitat isolated from use prior to September 1st. A qualified fisheries biologist will use a conservative definition of suitable spawning area and will

ensure that these areas are protected from use by appropriate exclusionary materials (e.g., anti-spawning mats or fencing). This effort will avoid any impacts to early fish life stages that are immobile and very sensitive to the crushing effects of heavy equipment operation on the stream bottom. These materials will be sufficiently anchored to the stream bottom during the instream work period to preclude spawning anadromous fish from digging redds in the work area. They will be removed after completion of instream work and prior to flood season. They will be anchored sufficiently to ensure that an unplanned high flow release from the dam will not cause them to release from their anchorage and create a litter problem. All material and water used for drilling operations will be contained and disposed of at an approved off-site disposal site. The contract specifications will prohibit discharge of cement fines, drilling fluids, contaminated water or other construction byproducts.

A seep well may be constructed outside the active low-flow channel to provide construction "make-up" water for all construction activities. A backhoe may be used to excavate and backfill soils at the seep well site. The well may consist of large diameter, perforated pipe placed vertically in the soil to a depth below the groundwater level. The annular space around the pipe will be filled with large aggregate to promote groundwater flow to the well.

Dewatering Activities

All material and water required for drilling and installing the bent and abutments will be contained and disposed of off-site by the contractor at an approved and appropriate disposal site. The specifications will instruct the contractor that no cement fines, drilling fluids or contaminated water will be allowed to enter the ground or stream. The containment and disposal system has not been determined, since equipment to do this type of work varies from contractor to contractor.

Should dewatering be required for construction at the site, the dewatering discharge will be contained in a tank or onsite containment/infiltration basin. In the event that an infiltration basin is used, discharge to the basin will be limited to water/groundwater only and will not be contaminated with deleterious construction byproducts.

Pier Construction

Bent construction will be accomplished using standard equipment and procedures based on types of equipment available. The reinforced concrete abutments and wingwalls will be founded on drilled shafts anchored in bedrock. All material and water used for drilling operations will be contained and disposed of at an approved off-site disposal site. The contract specifications will prohibit discharge of cement fines, drilling fluids, contaminated water or other construction byproducts. Slope protection measures will be implemented at abutments and constructed slopes to provide erosion protection from high flows.

Traffic Control / Detour

The Proposed Action enables use of the existing bridge for property owner and construction access. The contractor will provide traffic control. The contractor will ensure reasonable access for the property owners without long-term closures. Temporary closures of Salt Flat Road and the existing bridge may be required during the construction of the new road alignment or abutment(s).

Bridge Demolition

Removal of the existing bridge will occur after the new bridge is open to traffic. Demolition of the flatcars and pilings may require use of a crane, cutting torches and/or other demolition equipment. The railroad flat cars, abutments, and piers will be dismantled and salvaged or hauled to approved and appropriate disposal sites.

Construction debris resulting from demolition will not be allowed to enter the stream. The contractor will be required to submit a demolition plan to the BOR for approval. Any demolition activities that may create lead paint chips will require a lead containment system.

The selected method of disposition of the existing bridge components (demolition or re-use elsewhere) will determine the amount and type of wastes produced. The following procedures will apply to the contractor's selected demolition and/or removal activities:

- Asphalt and tar waste from the bridge should be recycled.
- Because of the presence of lead paint on the existing bridge structure, none of the painted metal portions of the existing bridges will be sawed, burned, or sanded. If cutting torches are used on painted metal surfaces, contractor will comply with appropriate regulations for safety, disposal and collection of byproducts. If disposal is chosen by the contractor, the existing bridgework shall be disposed of in a properly licensed landfill. Demolition workers should be protected according to the provisions of 8 CCR 1532, "Lead in Construction." Prior to demolition or re-use of the bridge, a licensed lead-based paint removal contractor should remove any loose, lead-based paint that is chipping or peeling from the bridges. The lead waste (paint chips, dust, etc.) should be disposed of appropriately.
- There will likely be some amount of treated wood waste produced. If disposal of treated wood waste is required, it will be disposed of at an appropriate landfill site.

Depending on contractor methods, demolition and removal of piers 2 and 3 may require installation of in-channel access ramps extending from the right and left banks to the piers. Ramps will be constructed similar to the mid-channel bar crossing described above. The in-channel ramps/crossings will be constructed upstream of the existing bridge and will cross the side channel and extend from the left and right banks to a point at or near piers 2 and 3. The ramps will be constructed of clean, washed spawning-size gravels and placed with an upper surface approximately one-foot below the active low-flow water surface elevation. Estimated quantity of gravel is approximately 25, 35, and 100 cubic yards for the low-flow channel crossing, left bank and right bank ramps, respectively. Landing mats may be utilized on the ramp surfaces if necessary to support the equipment used. After demolition, the ramp gravel will be distributed/contoured over the adjacent channel bottom.

Currently, loose, unattached concrete debris exists in the main channel from a previous bridge. The contractor will be required to remove and dispose of the existing concrete to the extent practicable.

Contractor Staging and Storage Areas

The existing bridge location will provide primary site access. Contractor staging areas are expected to be available within the temporary easement areas upstream and downstream of the existing bridge. The temporary construction easement areas are shown in **Figure 2-3**. The contractor will be required to place lath, flagging or other suitable markers at the edge of the temporary construction easements to show workmen the limits within which they must stay. The primary contractor staging area will likely be located on private property just upstream or downstream of Salt Flat Road between Goose Ranch Road and the existing bridge.

It is estimated that a working platform with an area 35-foot-wide by 55-foot-long (1900 ft^2), constructed of clean gravels, will be needed for equipment setup and access for bent construction. Dump trucks may be used to transport

material for construction of the platform. Staging areas consist of a level area for equipment set up, access and material storage.

Air Pollution and Dust Control

Efforts will be made to minimize air pollution. The BOR specifications require that the contractor comply with all applicable air pollution control rules, regulations, ordinances, and statutes. Contract documents will specify that the contractor will be responsible to limit dust by watering construction site areas used by trucks and vehicles.

Fill Import and Export

Embankment material is typically a well-graded mixture of clayey sand (SC), sandy lean clay (CL), lean clay (CL), silt (ML), or silty sand (SM). Embankment material gradation typically has a minimum of 20 percent by dry weight, of soil particles passing a No. 200 United States Standard sieve, with a maximum particle size of 4 inches in maximum dimension. The material shall be obtained from on-site excavation or other approved sources and will be free from chemical contamination, vegetation, roots, trash, debris, or other unsatisfactory material. All lumps, clods, and oversize particles shall be removed.

When rip-rap for slope protection is required, the rock used for riprap shall be hard, dense, and durable. Either quarried rock or boulders may be used for rip-rap. Since no riprap is available onsite, all material used for slope protection will be imported. The rock in rip-rap shall be reasonably well graded from the maximum size down to the minimum size as shown in **Table 2-5**, Rock sizes and riprap thickness.

TABLE 2-5 ROCK SIZES AND RIPRAP THICKNESS

Weight (ton / lbs.)	Approx. Max. Dia. (ft)	WEIGHT CLASSIFICATION GRADATION (Percent Larger Than Representative Weight and Diameter)					
		2 Ton	1 Ton	½ Ton	¼ Ton	Light	Facing
4 / 8000	4.5	0 – 5	-	-	-	-	-
2 / 4000	3.6	50 – 100	0 – 5	-	-	-	-
1 / 2000	2.8	95 – 100	50 – 100	0 – 5	-	-	-
0.50 / 1000	2.3	-	-	50 – 100	0 – 5	-	-
0.25 / 500	1.8	-	95 – 100	-	50 – 100	0 – 5	
0.10 / 200	1.3	-	-	95 – 100	-	50 – 100	0 – 5
0.038 / 75	1.0	-	-	-	95 – 100	-	50 – 100
0.013 / 25	0.7	-	-	-	-	95 – 100	90 – 100
Minimum Rip-rap Layer Thickness (ft)		5.4	5.4	4.3	3.3	2.5	1.8

The proposed Salt Flat Bridge and roadway require approximately 2300 cubic yards of imported embankment material. This material will be hauled from an approved borrow source. An estimated 620 cubic yards of rip-rap will be required for slope protection and abutment protection. The rip-rap will be "light" class for 2:1 slopes and/or "1/4-ton" class for 1.5:1 slopes.

Water Pollution Prevention

The contractor shall also implement water pollution control measures that conform to applicable and appropriate permits. The contractor will be required to use extreme care to prevent dirt, debris and miscellaneous demolition byproducts from entering the stream. Some of the key water pollution control measures that shall be implemented are listed below:

- The contractor shall exercise every reasonable precaution to protect the Trinity River from pollution with fuels, oils, bitumen, calcium chloride, and other harmful materials and shall conduct and schedule operations to avoid or minimize muddying and silting of the river. Care shall be exercised to preserve roadside vegetation beyond the limits of construction.
- Water pollution control work is intended to provide prevention, control and abatement of water pollution to the Trinity River, and shall consist of constructing those facilities that may be shown on the plans, specified herein or in the special provisions, or directed by the Engineer.
- The contractor shall provide temporary water pollution control measures, including, but not limited to dikes, basins, ditches, and applying straw and seed, which become necessary as a result of the contractor's operations. The contractor shall coordinate water pollution control work with all other work done on the contract.
- Before starting any work on the project, the contractor shall develop an agency-approved program to control water pollution effectively during construction of the project. The program shall show the schedule for the erosion control work included in the contract and for all water pollution control measures, which the contractor proposes to take in connection with construction of the project to minimize the effects of the operations upon adjacent streams and other bodies of water. The contractor shall not perform any clearing and grubbing or earthwork on the project until the program has been accepted.
- Where working areas encroach on live streams, and to the extent practicable, barriers adequate to prevent the flow of muddy water into streams shall be constructed and maintained between working areas and streams. During construction of the barriers, muddying of streams shall be held to a minimum.
- Water containing mud or silt from aggregate washing or other operations shall be treated by filtration, or retention in a settling pond, or ponds, adequate to prevent muddy water from entering live streams.
- Oily or greasy substances originating from the contractor's operations shall not be allowed to enter or be placed where they will later enter a live stream.
- Portland cement or fresh Portland cement concrete shall not be allowed to enter flowing water of streams.
- Material derived from roadway work shall not be deposited in a live stream channel where it could be washed away by high stream flows.
- Where there is possible migration of anadromous fish in streams affected by construction on the project, the contractor shall conduct work operations that allow free passage of migratory fish.

Tentative Schedule

Construction associated with the Project cannot begin until the environmental documentation has been adopted by the BOR, the BLM, and the County; preparation of final design, plans, specifications, and cost estimates; acquisition of ROW; acquisition of permits; and design approvals from state and federal agencies.

Construction is anticipated to begin in fall 2003 with installation of access routes, temporary crossing of side-channel, staging areas, mid-channel bar work platform, right abutment engineered fill-slopes and modification of existing

bridge alignment. Subsequent construction of the left abutment, bent structure, bridge superstructure, bridge decking, approach roadways, partial fine-grading and associated revegetation will occur prior to the following spring. Finally, removal of the existing bridge and foundations, construction of remaining areas of fine-grading and associated revegetation will occur during the following summer.

Total construction time (not including demolition in subsequent construction season) is anticipated to be approximately 135 days. In-river work for each element of this project is anticipated as follows: 10 days on the right abutment (5 days in 2003 and 5 days in 2004), 7 days on the side channel crossing installation and removal (5 days in 2003, 2 days in 2004). Demolition and clean up is projected to require about 50 days (including approximately 14 days of in-water pier removal).

Alternative 1. Replacement Upstream of Existing Alignment with a Two-Span Structure, Private Ownership

The Alternative 1 Bridge will be constructed at an angle to the existing bridge approximately 30 feet to 65 feet upstream of the existing left and right abutments, respectively (**Figure 2-4**). The right bridge abutment and approach will be located within lands administered by the BLM. The bridge type is a two-span, prefabricated steel truss with reinforced concrete deck. The bridge will be approximately 280 feet long (two 140-foot spans), with an 18-foot clear roadway width, designed to carry HS20 loading. New structures designed for HS20 vehicles are capable of carrying any legal load vehicle and do not require posted limits. The superstructure and guardrail will be fabricated with weathering steel. This alternative requires raising the left road approach as much as approximately 4 feet to provide sufficient hydraulic freeboard over the river.

The increased span length will provide a wider flow area under the bridge, reducing the backwater surface elevations and water velocities. This will result in a more natural condition than the existing constricted channel. The abutments and single column bent will support the superstructure and will be located outside of the active low-flow channel (Q = 450 cfs). This will allow the contractor to minimize activity within the active low-flow channel.

The single column bent will be constructed on the mid-channel bar above the active low-flow channel elevation. The contractor will be required to provide access to the mid channel bar by constructing a temporary crossing that provides a stable route for equipment and contractor personnel. The crossing will minimize impacts to beneficial uses, including aquatic organisms and domestic and agricultural water supplies. The temporary crossing will be constructed by placing and contouring spawning gravel in the channel to provide an adequate base for placement of steel landing mats.

The mats may be placed approximately 1 foot below the low-flow water surface elevation and will extend up the channel banks to an elevation providing approximately 3 feet of freeboard above the low-flow water surface elevation. The mats may remain in place until removed during the subsequent in-channel construction season (June 15 to September 15).

Spawning gravel gradation will be within the following ranges: (Screen Size/Percent passing by dry weight) 5-inch/100%, 4-inch/85-90%, 2-inch/20-25%, 1/2-inch/0-5%, 1/4-inch/0%. The gravel will consist of hard, dense, and durable particles of river run, well-rounded materials. Gravel will be washed to meet or exceed a cleanness value of 85 according to Caltrans test #227 specifications.

The bent will be a 3.5-foot diameter column anchored to bedrock in one 3.5-foot diameter drilled shaft. It will have a small "footprint," impacting the least amount of area, and will be relatively quick to install. It is estimated that a working platform with an area 35-foot-wide by 50-foot-long (+/- 1700 ft^2) will be needed for equipment setup, access for bent construction and crane operation. The working platform will be constructed using cut-and-fill methods with existing site materials and/or specified spawning gravels. Dump trucks and earthmoving equipment may be used to construct the mid-channel bar platform. Bent construction will be accomplished using standard equipment and procedures based on types of equipment available.

The reinforced concrete abutments will be founded on drilled shafts anchored in bedrock. At the right abutment, an embankment will be constructed of compacted earth materials retained behind a segmental (retaining) wall. A 1.5:1.0 riprap slope will descend from the wall to protect the embankment and wall from hydraulic scour. The slope will be faced with well-graded, 18-inch maximum diameter, angular riprap underlain by geotextile fabric. The riprap slope will extend to the edge of the active low-flow channel for a length of about 30 feet parallel to the channel bank. Although not designed to enter the channel, depending on placement techniques and actual site conditions, rip-rap may extend slightly into the active low-flow channel. If required, the rip-rap will be carefully placed using a combination of mechanical and hand-methods (not dumped). The toe of the rip-rap slope has been designed such that no excavation in the channel would be required for placement. If rip-rap is placed in the channel, it is estimated that placement may take 1 to 2 days to complete.

The contractor will utilize the mid-channel bar platform for bent construction and for positioning a crane to lift the bridge superstructure in place. It is anticipated the superstructure will be placed in the first fall/winter season. Side channel crossing to access the platform will be kept to a minimum and is anticipated to occur roughly 10 to 20 times for each construction component (i.e. bent and superstructure installation). Vehicles crossing the side channel may include: earthmoving equipment, crane(s) and trucks. The contractor will be required to clean vehicles prior to crossing the side channel. Staging areas for construction will be located immediately upstream or downstream of the existing left abutment or may be located upstream on the Bonk parcel approximately 200 feet upslope from the left abutment.

All material and water used for drilling operations will be contained and disposed of at an approved off-site disposal site. Make-up water pumped from the river will pass through a screen at the inlet with maximum ¼-inch openings and a maximum intake velocity of 0.8 feet per second. The contract specifications will prohibit discharge of cement fines, drilling fluids, contaminated water or other construction byproducts. Slope protection measures will be implemented at abutments and constructed slopes to provide erosion protection from high flows.

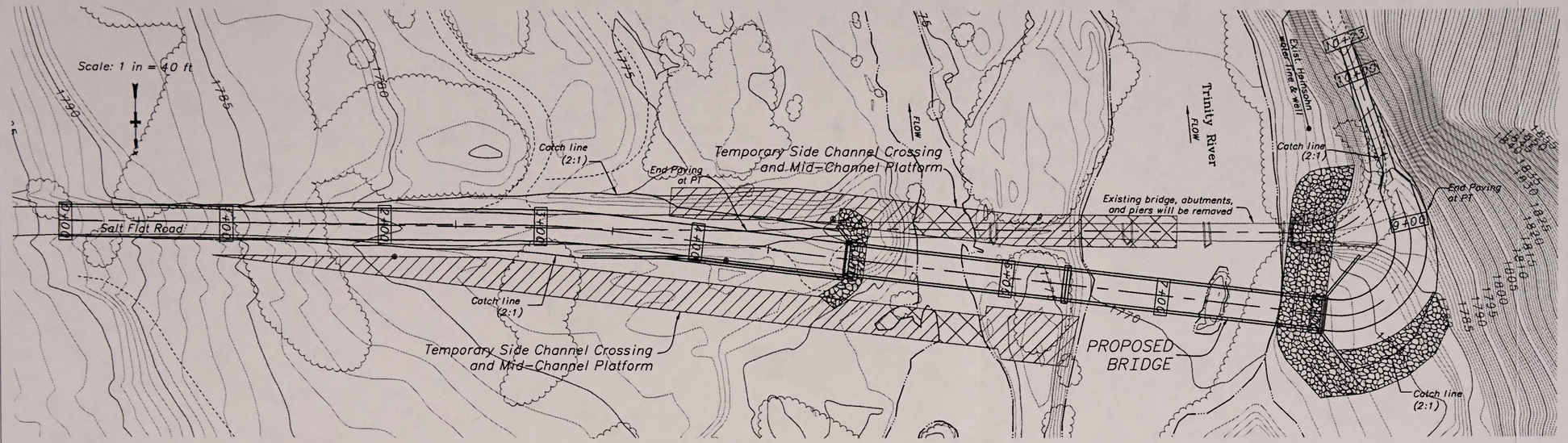
Demobilization procedures will include clean up of all construction debris, fine-grading and contouring to "blend" new grades to existing grades and revegetation where required by final design and/or permits.

Design Criteria

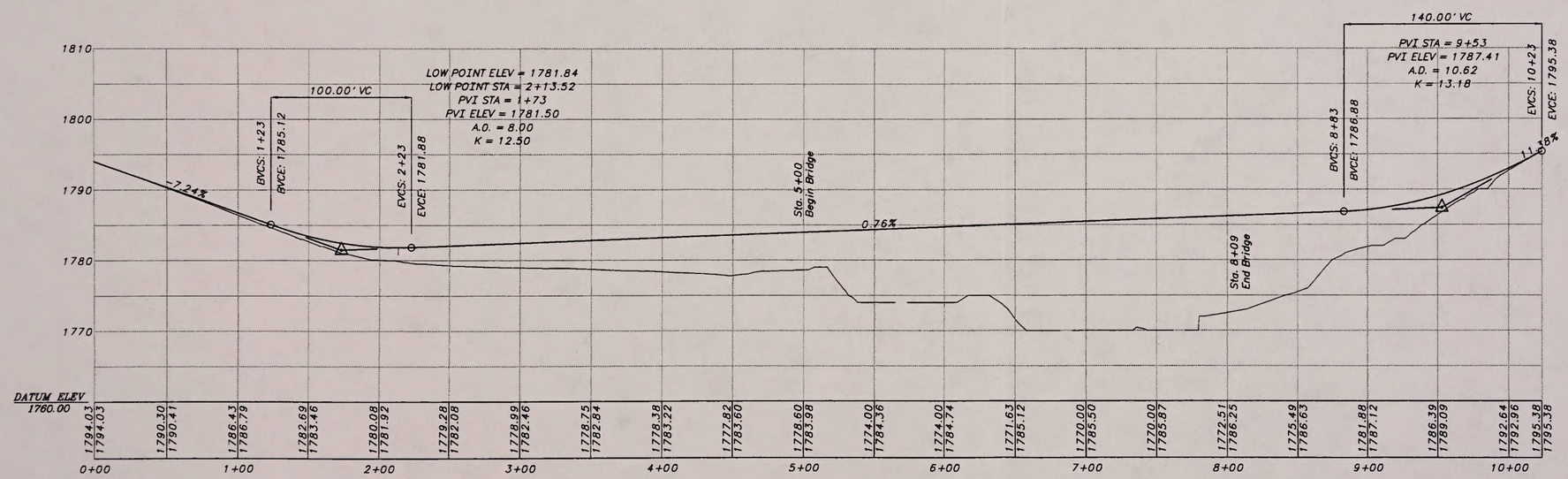
The same documents that were referenced for use in the bridge design criteria for the Proposed Action were also used for the development of Alternative 1.

Hydraulics

A HEC-RAS hydraulic model was developed and calibrated to match measured water surface elevations upstream of the existing bridge. This alternative replaces the existing bridge with a new bridge immediately upstream. To obtain

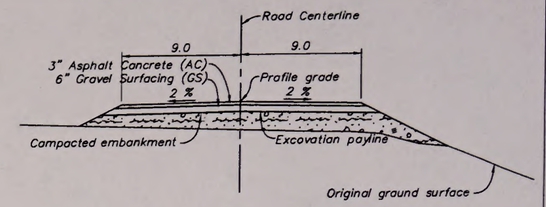


Salt Flat Bridge Alternative 1 Site Layout



Salt Flat Bridge Alternative 1 Profile

(new bridge at El. 1785.00 ft)



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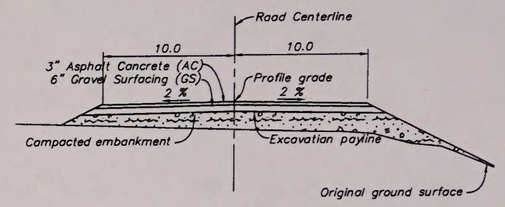

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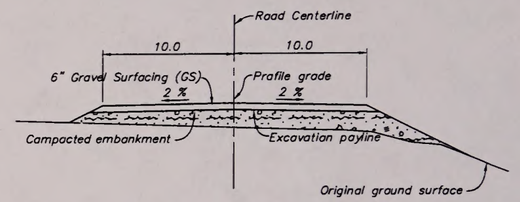
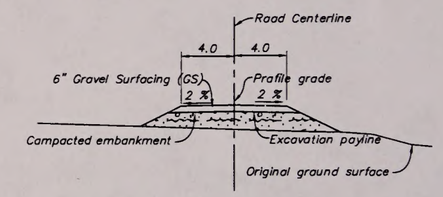


STA 8+00 TO 9+00



STA 9+10 TO 10+00

Typical Road Sections

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT – CALIFORNIA
TRINITY RIVER DIVISION
TRINITY RIVER MAINSTEM FISHERY RESTORATION

TRINITY RIVER BRIDGES

SALT FLAT BRIDGE
ALTERNATIVE 1 – UPSTREAM TRUSS
PLAN AND PROFILE

DESIGNED ANNE MCDANIEL CHECKED Name
DRAWN ANNE MCDANIEL TECH. APPR. Name
PEER REVIEW Name
DENVER, COLORADO WATER CONVEYANCE GROUP
FEBRUARY 21, 2003

F:Projects/10006 - Trinity River Bridge Replacement\GIS\Working_CAD_Files/Salt_Flat_Alt1.dwg Source: U.S. Bureau of Reclamation 04-17-03 tkoehler

North State Resources, Inc.

Trinity River Bridges Project

Figure 2-4
Salt Flat Bridge Alternative 1
Site Layout & Profile

design water surface elevations for the range of anticipated flows, a HEC-RAS model was created to simulate a new bridge at the upstream location. **Table 2-6** lists the anticipated flows and corresponding water surface elevations for the proposed bridge structure.

TABLE 2-6
FLOW DISCHARGES AT SALT FLAT BRIDGE @ RM = 106.94
ALTERNATIVE 1 (NEW BRIDGE UPSTREAM OF EXISTING BRIDGE)
TRINITY DAM DISCHARGES PLUS TRIBUTARY FLOWS

Flow description	LC = 1781.5 TOD = 1784.0 (cfs)	Water Surface Elevations (ft)
Return Period Peak Flow (Annual with ROD)[1]	Q_{50} = 11,700 Q_{100} = 12,900	El. = 1779.4 El.= 1779.9
Maximum Controlled - Flow Release [2]	Q_{MCR} = 14,900	El. = 1780.6
Estimated flow during 1/1/97 [3]	Q_{1997} = 11,000	El. = 1779.0

Notes:

[a] Return Period Peak Flow – Annual with ROD – Combined winter and spring considering all 5 ROD water year type. Includes a possible 11,000 cfs release from Lewiston Dam in the spring.

[b] Maximum Controlled-Flow Release – 13,750 cfs is the maximum controlled release from Trinity Dam. Combining this flow with 100-year May/June peak tributary flow gives the flow value shown.

[c] Scott McBain of McBain and Trush provided flow estimates for the January 1, 1997 flood event.

[d] Lewiston Dam releases to the Trinity River based on the ROD. 450 cfs is the proposed flow release at Lewiston Dam between July 22 and October 15 of each year. 300 cfs is the proposed flow release at Lewiston Dam between October 16 and April 15 of each year.

LC = Bridge low chord, or bottom of beam elevation at lowest point under the bridge.

TOD = Top of Deck elevation. When top of deck elevation varies across the length of the bridge, the value shown in the table is the lowest top of deck elevation.

RM = Trinity River mile.

msl = Elevation above mean sea level (feet).

Q = Flow rate (cfs)

Alignment and Design Speed

Salt Flat Road and the left bridge approach will be designed for a speed of 25 mph. The right approach will have a design speed of 15 mph because of the sharp curve and steeper grade. The proposed roadway alignment from the left approach is tangent to the existing roadway alignment for the first 340 feet. A horizontal curve, with a 500-foot radius is used to move the roadway alignment to the north and upstream of the existing bridge. The bridge begins at Station 5+00 and ends at Station 7+84, and will not be parallel to the existing bridge. The left abutment is 10 feet north of the existing bridge left abutment, and the right abutment is 50 feet north of the existing bridge right abutment. A horizontal curve with a 60-foot radius is used to tie the new road alignment on to the existing road. The proposed alignment length is approximately 1035 feet. The approach roadway on the right side of the river will be on a sharp curve and tie into the existing road.

Roadway Approaches

The roadway profile for this bridge project is based on the Caltrans and FHWA hydraulic freeboard guidelines. The application of these guidelines results in 2 feet freeboard over the 50-year event and the ability to pass the 100-year event. The minimum soffit elevation is 1781.5 feet msl. The bridge has a superstructure depth of 2.5 feet, and the truss height is 11 feet.

The top of roadway required to provide 2-feet of freeboard for the Q_{50}, requires that the left roadway approach be raised approximately 4 feet. The new bridge and roadway profile will be designed to provide the optimal sight distance. To meet alignment and minimum design speed requirements, the right approach requires a horizontal curve with a 60-foot radius, designed for 15 mph.

The proposed alignment from the left (from Goose Ranch Road) descends towards the proposed bridge at a 7.7 percent grade to elevation 1781.5 feet msl. From this point, the road is level at elevation 1781.5 feet msl for approximately 600 feet. The proposed bridge begins at Station. 5+00, and it is level across the river. A 250 -foot vertical curve from the end of the bridge is used to tie the new proposed roadway profile to the existing grade, which results in a 9.17 percent grade. If access is needed to the downstream side of the existing sand bar downstream of the left approach, a ramp will be constructed perpendicular to the proposed alignment.

Table 2-7 shows top of approach, top of deck, and top of structure elevations for Alternative 1 and Alternative 2. Typically, approach road elevations are the same as the top of bridge deck elevations.

Bridge Replacement

Under Alternative 1, the replacement bridge will have an 18-foot clear roadway width and provide two 9-foot lanes. The total structure width including the truss members is approximately 22 feet.

Slope Protection

Slope protection and/or rip-rap will be provided at both abutments, and will be sized such to prevent scour (**Figure 2-4**). The precise limits and size of slope protection, will be shown on the final drawings The rip-rap will be "light" class for 2:1 slopes and/or "1/4-ton" class for 1.5:1 slopes as described in **Table 2-5**.

Drainage

For Alternative 1, the proposed bridge and roadway will have a crowned cross section, which will provide sufficient gradient for drainage of surface water. Each approach will include an asphalt apron to receive mud and water from vehicles approaching the bridge, minimizing introduction of contaminated water or sediment to the stream. Drainage of the bridge deck will be designed to prevent direct discharge of stormwater from the deck to the live stream.

TABLE 2-7

APPROACH, TOP OF DECK, AND TOP OF STRUCTURE ELEVATIONS – SALT FLAT BRIDGE

ALTERNATIVES 1 AND 2

Structure	Low chord elevation (ft)	Left Approach/top of deck elevation (ft)	Right approach/top of deck elevation (ft)	Top of Structure elevation (ft) [a]
Alternative 1/2	1781.5	1784.0	1784.0	1795.0

Notes:

[a] Elevation shown is top of truss for Alternative 1/ Alternative 2 bridge

Right-of-Way

The existing bridge is on private property, however, the abutments of the proposed bridge will be entirely or partially located on lands managed by the BLM. Temporary construction easements will be required for activity on private property both upstream and downstream of the bridge and roadway. The relocation for the bridge onto public lands may result in ownership and access issues. Under this alternative, a private bridge placed on public lands managed by the BLM will require:

- A ROW grant with a fill slope encroachment on public land from the private bridge.
- A ROW granted to the BOR, Trinity County, or a private individual (or association).
- Fees subject to review by the CA BLM State Director.
- Maintenance and liability agreements to ensure that the BLM is not held responsible for potential injury or damages that might occur in association with the easement.
- A right of administrative access across the bridge

Temporary construction easements on both sides of the proposed bridge will be necessary for construction activities. Existing property lines are depicted in **Figure 2-5**. Specifications will require that clearing and grubbing of vegetation be kept to a minimum. The BLM may require a special permit for temporary construction activity at both roadway approaches.

Utilities

No overhead utilities were observed and there does not appear to be any underground public utilities in the vicinity of the proposed bridge. Utilities that may be impacted include the private service well and water lines along the north edge of the Salt Flat Road. Depending on the bridge location, portions of the service lines may need to be relocated. Trinity County does not expect this project to impact the facilities or long-term access for various districts or utilities. Future utility access (conduits) can be attached to the steel truss members.

Bridge Railing

Appropriate signs, including speed limit and private road access, will be added on each approach. Approach guardrails will be constructed at both ends of the bridge. Railing will be constructed of weathering steel supported by timber posts. Bridge railings will conform to the full-scale crash-test criteria TL-2 established in the NCHRP Report 350. This criteria requires TL-2 for roadways with design speeds of 25 mph.

Construction Criteria and Methods

Specifications

Construction specifications will be developed by the BOR, and will meet Caltrans Standard Specifications, and the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects.

Construction Process Overview

The list of construction activities provided below is not intended to be a precise or comprehensive construction schedule. Some of these construction processes may temporarily affect property owner access.

- Construct staging areas (consist of a level area for equipment set up, access and material storage) for installing drilled shafts for abutments and bent.
- Construct temporary crossing over low flow channel to access bent location.
- Drill shafts.
- Construct formwork for abutments and bent.
- Place reinforcement and concrete.

- Assemble and erect prefabricated bridge.
- Construct roadway approaches and tie into existing roads.
- Remove existing railroad flatcar bridge superstructures.
- Install slope protection as required.
- Construct temporary in-channel gravel platforms to access existing piers.
- Remove existing bridge abutments and piers.
- Fine-grading and additional slope protection or revegetation

Some of these construction processes may temporarily affect property owner access. The listed process is not intended to be a precise or comprehensive construction schedule.

In-River Construction

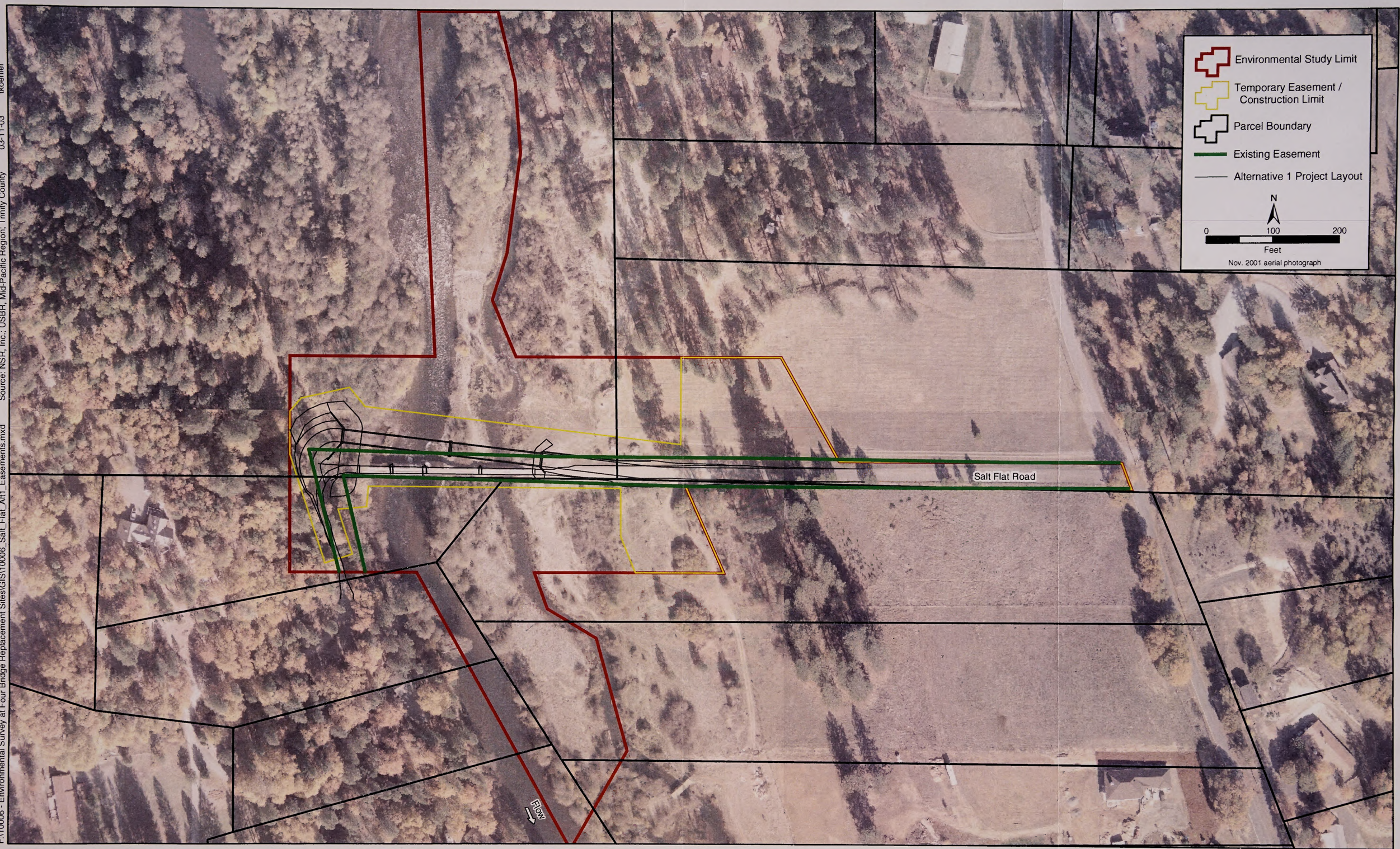
The abutments and single column bent that will support the superstructure will be located outside of the active low-flow channel (Q = 450 cfs). This will allow the contractor to access and install the supports without working in the active low-flow channel. The single column bent will be constructed on the mid-channel bar above the active low-flow channel. The contractor will be required to access to the mid channel bar by constructing a temporary crossing that provides a stable route for equipment and contractor personnel (**Figure 2-5**). The crossing will minimize impacts to beneficial uses, including aquatic organisms and domestic and agricultural water supplies.

Construction of the temporary crossing may necessitate use of an excavator and a dozer. The temporary crossing will be constructed by placing and contouring spawning gravel in the channel to provide an adequate base for placement of steel landing mats (similar to temporary military runway matting). The mats may be placed to provide approximately 1 foot of water depth in the active low-flow channel and will extend up the channel banks to an elevation providing approximately 3 feet of freeboard above active low-flow water surface elevation. The mats may remain in place until removed during the subsequent in-channel construction season (June 15 to September 15).

The contractor will utilize the mid-channel bar platform for bent construction and for craning the bridge superstructure in place. It is anticipated the superstructure will be placed in the fall/winter season after the in-river construction period has ended. Side channel crossing to access the platform will be kept to a minimum and is anticipated to occur roughly 10 to 20 times for each construction component (i.e., bent and superstructure installation). Vehicles crossing the side channel may include: earthmoving equipment, crane(s) and trucks. The contractor will be required to clean vehicles prior to crossing the side channel.

Construction of the right abutment engineered fill slope will require work within the channel near the right bank. The fill slope and riprap may extend below the active low-flow water surface elevation for a length of approximately 30 feet along the right channel bank.

Depending on contractor methods, demolition and removal of piers 2 and 3 may require installation of in-channel access ramps extending from the right and left banks to the piers. Ramps will be constructed similar to the mid-channel bar crossing described above. The in-channel ramps/crossings will be constructed downstream of the existing bridge and will cross the side channel and extend from the left and right banks to a point at or near piers 2 and 3.



F:\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Salt_Flat_Alt1_Easements.mxd Source: NSR, Inc.; USBR, Mid-Pacific Region; Trinity County 03-11-03 tkoehler

North State Resources, Inc.

Trinity River Bridges Project

Figure 2-5
Salt Flat Bridge Alternative 1
Construction Limits & Easements

The ramps will be constructed of specified, washed spawning-size gravels. Estimated quantity of gravel is approximately 25, 35, and 100 cubic yards for the low-flow channel crossing, left bank and right bank ramps, respectively. Landing mats may be utilized on the ramp surfaces if necessary to support the equipment used. After demolition, the ramp gravel will be distributed/contoured over the adjacent channel bottom.

Demolition of steel pilings may require use of a crane, cutting torches and/or other demolition equipment. The contractor will be required to prevent debris from demolition activities from entering or remaining in the river. Currently, loose, unattached concrete debris exists in the main channel (likely from a previous bridge). The contractor will be required to remove and dispose of the existing concrete debris to the extent practicable.

All material and water used for drilling operations will be contained and disposed of at an approved off-site disposal site. The contract specifications will prohibit discharge of cement fines, drilling fluids, contaminated water or other construction byproducts.

A seep well may be constructed outside the active low-flow channel to provide construction "make-up" water for all construction activities. A backhoe may be used to excavate and backfill soils at the seep well site. The well may consist of large diameter, perforated pipe placed vertically in the soil to a depth below the groundwater level. The annular space around the pipe will be filled with large aggregate to promote groundwater flow to the well.

Any in-river construction measures which are planned for implementation outside of the June 15th to September 15th dry-season construction window will have all potential salmonid spawning habitat isolated from use prior to September 1st. A qualified fisheries biologist will use a conservative definition of suitable spawning area and will ensure that these areas are protected from use by appropriate exclusionary materials (e.g., anti-spawning mats or fencing). This effort will avoid any impacts to early fish life stages that are immobile and very sensitive to the crushing effects of heavy equipment operation on the stream bottom. These materials will be sufficiently anchored to the stream bottom during the instream work period to preclude spawning anadromous fish from digging redds in the work area. They will be removed after completion of instream work and prior to flood season. They will be anchored sufficiently to ensure that an unplanned high flow release from the dam will not cause them to release from their anchorage and create a litter problem.

Dewatering Activities

All material and water required for drilling and installing the bent and abutments will be contained and disposed of off-site by the contractor at an approved and appropriate disposal site. The specifications will instruct the contractor that no cement fines, drilling fluids or contaminated water will be allowed to enter the ground or stream. The containment and disposal system has not been determined, since equipment to do this type of work varies from contractor to contractor.

Should dewatering be required for construction at the site, the dewatering discharge will be contained in a tank or onsite containment/infiltration basin. In the event that an infiltration basin is used, discharge to the basin will be limited to water/groundwater only and will not be contaminated with deleterious construction byproducts.

Pier Construction

Bent construction will be accomplished using standard equipment and procedures based on types of equipment available. The reinforced concrete abutments and wingwalls will be founded on drilled shafts anchored in bedrock.

All material and water used for drilling operations will be contained and disposed of at an approved off-site disposal site. The contract specifications will prohibit discharge of cement fines, drilling fluids, contaminated water or other construction by-products. Slope protection measures will be implemented at abutments and constructed slopes to provide erosion protection from high flows.

Traffic Control / Detour

This alternative enables use of the existing bridge for property owner and construction access. The contractor will provide traffic control. The contractor will ensure reasonable access for the property owners without long-term closures. Temporary closures of Salt Flat Road and existing bridge may be required during the construction of the new road alignment or abutment(s).

Bridge Demolition

Removal of the existing bridge will occur after the new bridge is open to traffic and would follow the same procedures previously discussed for the Proposed Action.

Contractor Staging and Storage Areas

The existing bridge location will provide primary site access. Contractor staging areas are expected to be available within the temporary easement areas upstream and downstream of the existing bridge. The temporary construction easement areas are shown in **Figure 2-5**. The contractor will be required to place lath, flagging or other suitable markers at the edge of the temporary construction easements to show workmen the limits within which they must stay. The primary contractor staging area will likely be located on private property just upstream or downstream of Salt Flat Road between Goose Ranch Road and the existing bridge. Alternate locations are yet to be determined. It is estimated that a working platform with an area 30-foot-wide by 55-foot-long (1700 ft^2), constructed of clean gravels, will be needed for equipment setup and access for bent construction. Dump trucks may be used to transport material for construction of the platform. Staging areas consist of a level area for equipment set up, access and material storage.

Air Pollution and Dust Control

Efforts will be made to minimize air pollution. The BOR specifications require that the contractor comply with all applicable air pollution control rules, regulations, ordinances, and statutes. Contract documents will specify that the contractor will be responsible to limit dust by watering construction site areas used by trucks and vehicles.

Fill Import and Export

Embankment material is typically a well-graded mixture of clayey sand (SC), sandy lean clay (CL), lean clay (CL), silt (ML), or silty sand (SM). Embankment material gradation typically has a minimum of 20 percent by dry weight, of soil particles passing a No. 200 United States Standard sieve, with a maximum particle size of 4 inches in maximum dimension. The material shall be obtained from on-site excavation or other approved sources and will be free from chemical contamination, vegetation, roots, trash, debris, or other unsatisfactory material. All lumps, clods, and oversize particles shall be removed.

When riprap for slope protection is required, the rock used for riprap shall be hard, dense, and durable. Either quarried rock or boulders may be used for riprap. Since no riprap is available onsite, all material used for slope protection will be imported. The rock in riprap shall be reasonably well graded from the maximum size down to the

minimum size as previously shown in **Table 2-5**, Rock Sizes and Riprap Thickness. The proposed Salt Flat Bridge and roadway require approximately 2300 cubic yards of imported embankment material. This material will be hauled from an approved borrow source. An estimated 620 cubic yards of rip-rap will be required for slope protection and abutment protection.

Water Pollution Prevention

The contractor shall also implement the same water pollution control measures that were previously described for the Proposed Action.

Utility Relocation

Relocation of existing utilities is not anticipated at the Alternative 1 location.

Tentative Schedule

The project schedule is based on a Contract Award in summer/fall, 2003. Mobilization would occur shortly thereafter. The majority of the scheduled work from mobilization to opening of the bridge to traffic would be completed in 135 calendar days.

A project of this magnitude might typically be expected to take 2 years to complete. The majority of the construction is expected to be complete by spring 2004, with rehabilitation and final construction activities extending through the summer of 2004. The work remaining after bridge opening (i.e., removal of existing abutments and piers, fine grading and revegetation) would occur in the following window for working within the low-flow active channel (June 15 to September 15, 2004). This will require an additional 50 calendar days at the bridge site:

Construction associated with this Project cannot begin until the environmental documentation has been adopted by the BOR, the BLM, and the County; preparation of final design, plans, specifications, and cost estimates; acquisition of ROW; acquisition of permits; and design approvals from state and federal agencies.

Alternative 2. Replacement Upstream of Existing Alignment with a Two-Span Structure, Public Ownership

Alternative 2 is essentially the same bridge design as Alternative 1. The fundamental difference between these alternatives is ownership. Under Alternative 2, the new bridge structure would become publicly owned. As a publicly owned feature, the bridge and associated roadway will be under the jurisdiction of Trinity County or some other public entity. The Trinity County Transportation Department Design Guidelines were used in the development of this alternative, with the following differences incorporated into Alternative 2:

- Bridge Width 2 12-foot lanes (24-feet width)
- Roadway Width 2 12-foot lanes, 2 2-foot shoulders (paved)
- Roadway surface Asphaltic concrete
- Roadway drainage Crowned and/or ditched with approved energy dissipater

Figure 2-6 (Alternative 2 site layout) provides additional details on this alternative.

In addition to the technical specifications described above, specific ROW issues and requirements are described below.

Right-of-Way

The existing bridge is on private property, however, the abutments of the proposed bridge will be entirely or partially located on lands managed by the BLM. The relocation for the bridge onto public lands may result in ownership and access issues. Under this alternative, the bridge and associated roadway will be owned and managed by a public agency (i.e., Trinity County) within a permanent easement conveyed by the BLM. Temporary construction easements will be required for activity on private property both upstream and downstream of the bridge and roadway. Permanent easements will be required both upstream and downstream of the proposed roadway. **Figure 2-7** (Construction Limits and Easements) provides additional details on this Alternative. The BLM will need to address the following issues to accommodate the proposed bridge, roadway alignment and approach fills.

- Transfer of an easement or ownership from the BLM to the County.
- Assignment of long-term bridge and Salt Flat Road maintenance responsibilities to the County.
- Development of a turn-around on the right bank to meet County Road Guidelines.
- Potential development of additional river access.
- Given the perceived opposition of landowners in the Salt Flat area to public ownership, it is likely that legal proceedings will be required to acquire private ROW to access the bridge from the right (east) side, and to provide a turnaround area on the left (west) side of the bridge.

Temporary construction easements on both sides of the proposed bridge will be necessary for construction activities. Existing property lines are depicted in **Figure 2-7**. Specifications will require that clearing and grubbing of vegetation be kept to a minimum. The BLM may require a special permit for temporary construction activity at the right approach. Specifications will require that clearing and grubbing of vegetation be kept to a minimum.

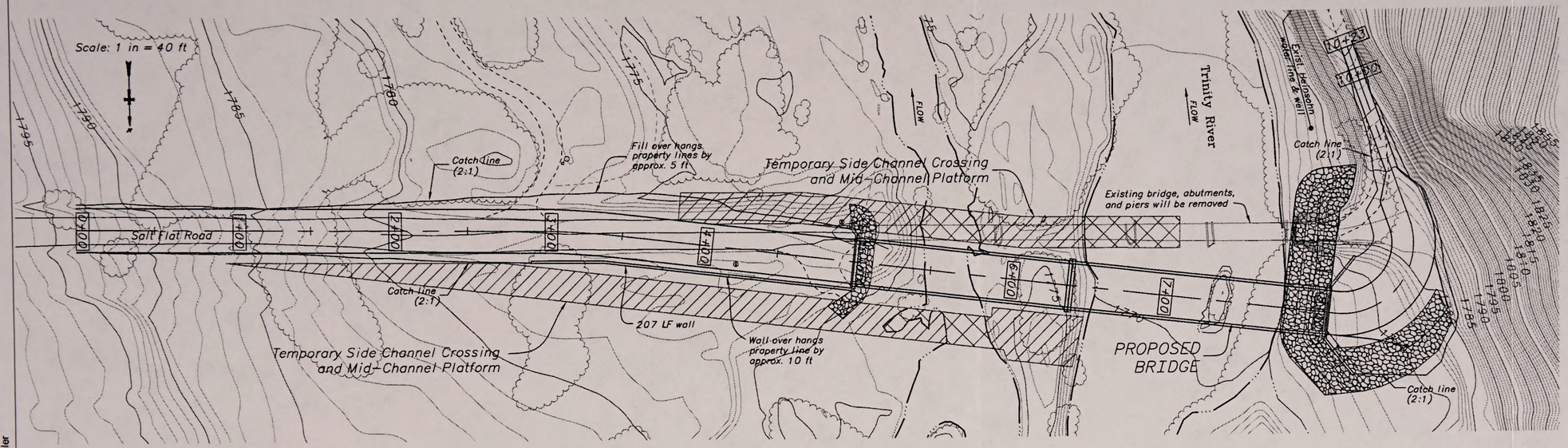
2.4.2 BUCKTAIL

No-Action Alternative

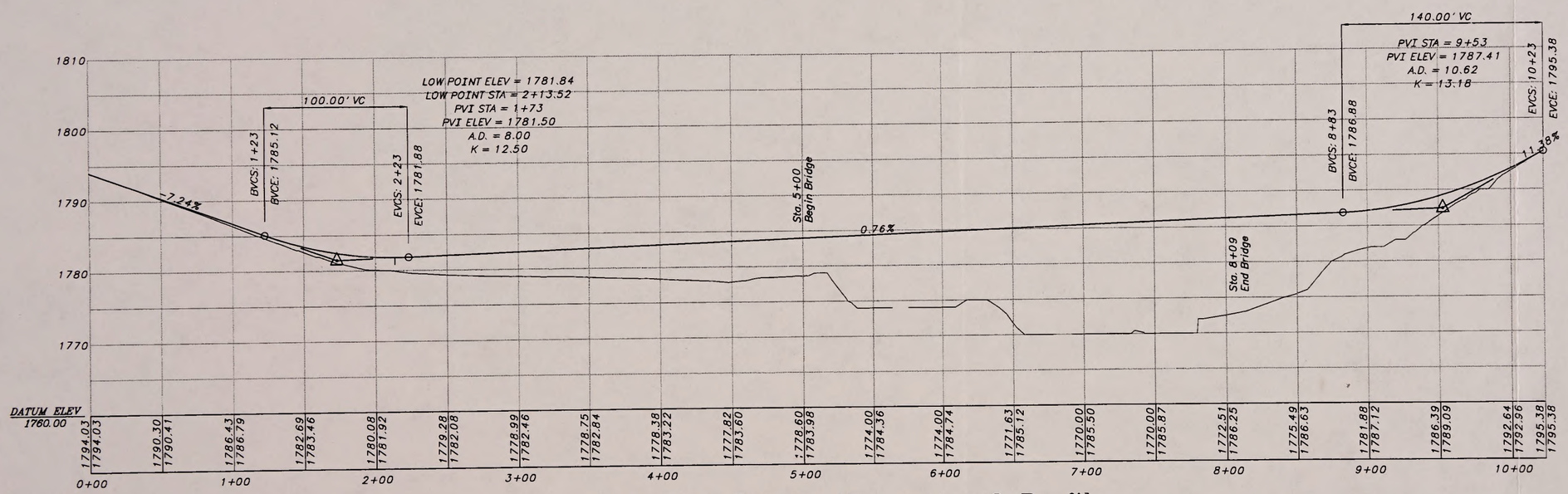
Under the No-Action (No Project) Alternative, the BOR, the BLM, and the County would not proceed with proposed culvert and roadway improvements at the Bucktail Bridge site. The No-Action (No-Project) Alternative is the existing condition of the bridge and ancillary features at the Bucktail project site. The following subsection provides a detailed description of the existing features and the associated conditions.

Existing Conditions

The existing Bucktail Bridge, on Browns Mountain Road, is located about 5 miles west of Lewiston California, where it spans the Trinity River, near RM 105 (**Figure 2-8**). The bridge is a single span; 76-foot-long, 32-foot-wide, steel girder superstructure with concrete deck, and concrete abutments supported by steel "H" piles. The bridge (Br. No. 5C-207), which is owned and maintained by Trinity County, was built in 1984 and serves the Bucktail subdivision, as well as lands administered by the BLM. The Bucktail subdivision comprises about 60 parcels. The road approaches are paved with asphalt concrete. The low chord elevation, near the right abutment is approximately 1757.8 feet msl and the superstructure depth is 53 inches.

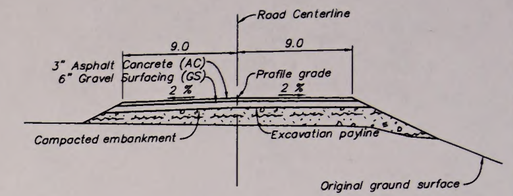


Salt Flat Bridge Alternative 2 Site Layout

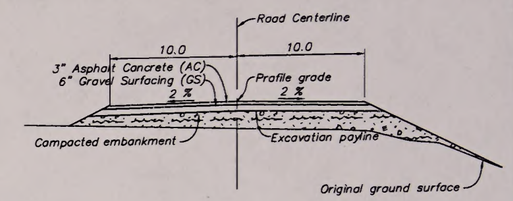


Salt Flat Bridge Alternative 2 Profile

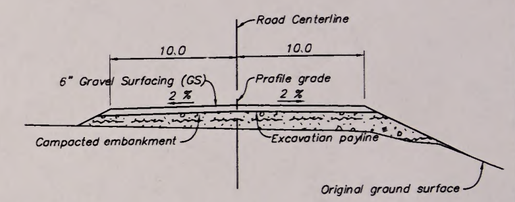
(new bridge at El. 1785.00 ft)



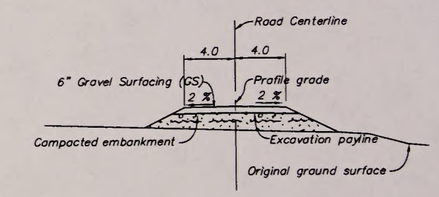
STA 0+00 TO 3+50



STA 3+60 TO 5+00



STA 8+00 TO 9+00



STA 9+10 TO 10+00

Typical Road Sections

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT – CALIFORNIA
TRINITY RIVER DIVISION
TRINITY RIVER MAINSTEM FISHERY RESTORATION

TRINITY RIVER BRIDGES

SALT FLAT BRIDGE

ALT. 2 – 28 FT CLEAR SPAN UPSTREAM TRUSS
PLAN AND PROFILE

DESIGNED ANNE MCDANIEL CHECKED Name
DRAWN ANNE MCDANIEL TECH. APPR. Name
PEER REVIEW Name
WATER CONVEYANCE GROUP
DENVER, COLORADO FEBRUARY 21, 2003

F:Projects/10006 - Trinity River Bridge Replacement/GIS/Working_CAD_Files/Salt_Flat_Alt2.dwg Source: U.S. Bureau of Reclamation 04-17-03 tkoehler

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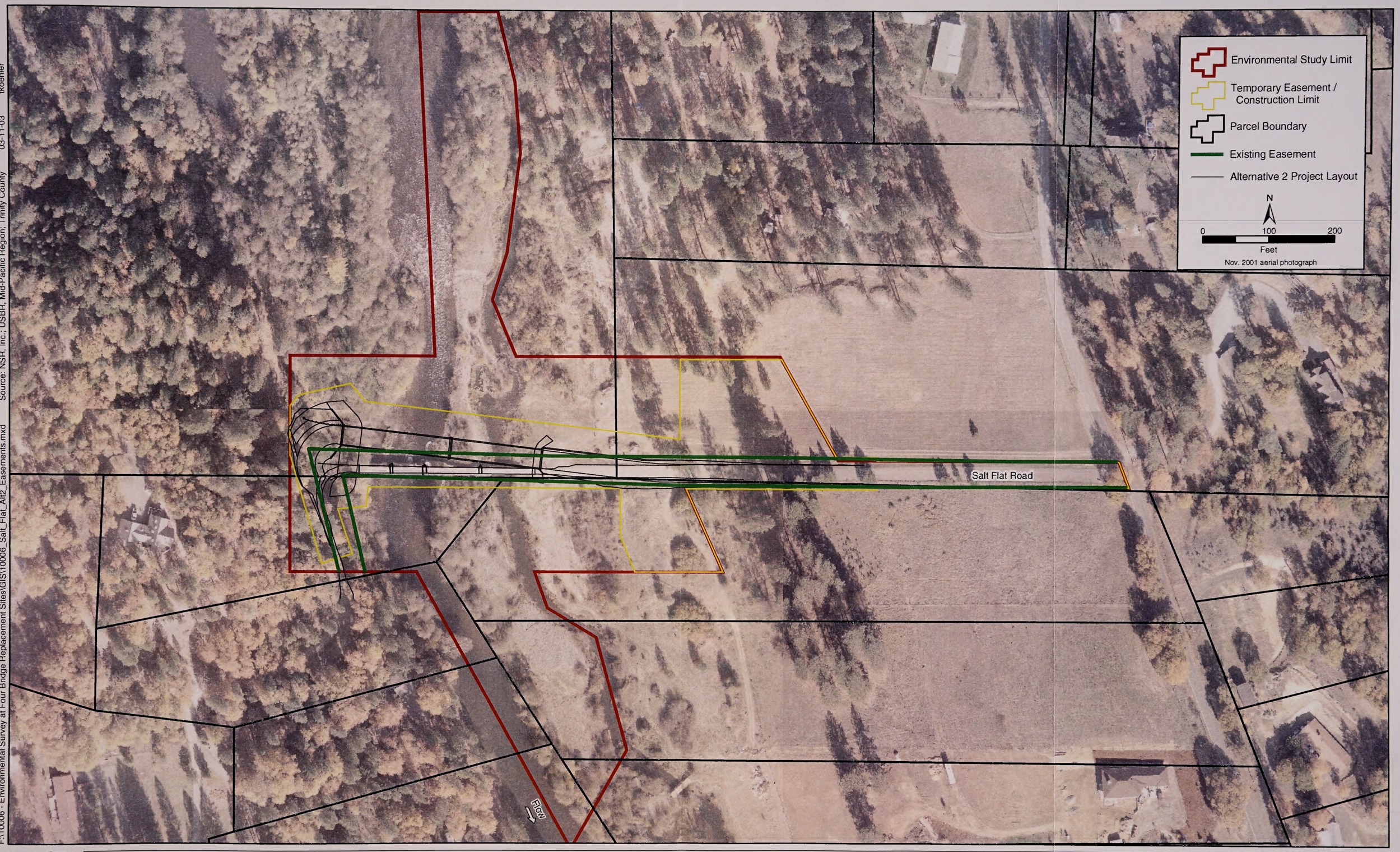
Trinity River Bridges Project

Figure 2-6
Salt Flat Bridge Alternative 2
Site Layout & Profile



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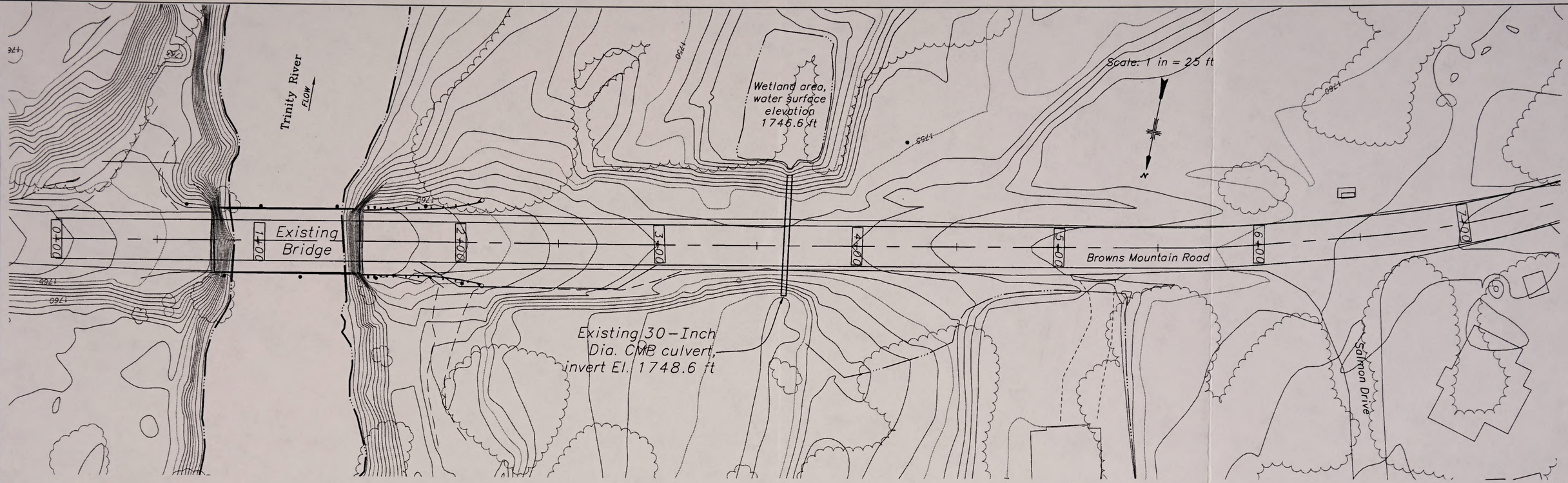
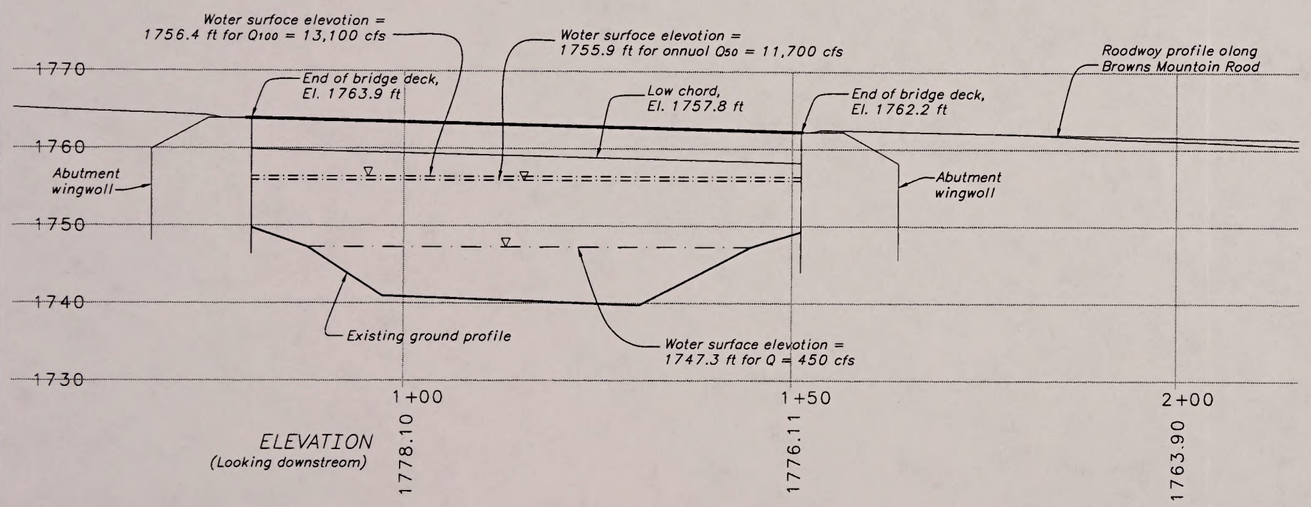
North State Resources, Inc.

Trinity River Bridges Project

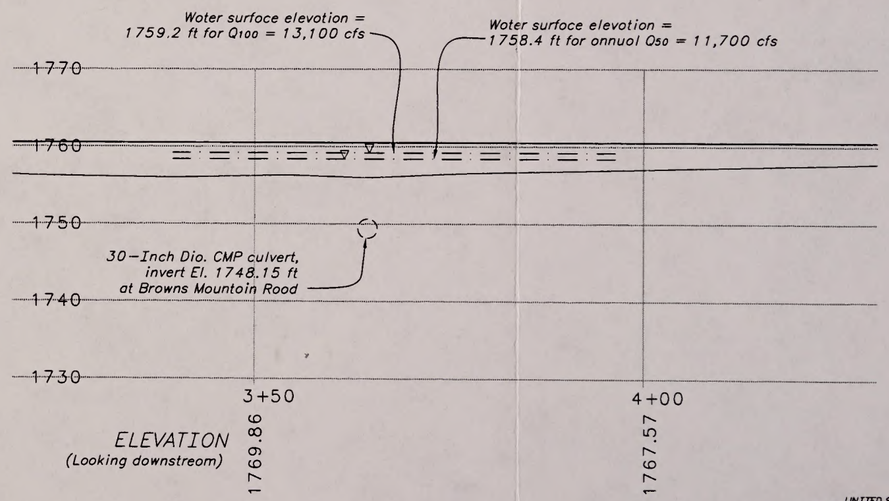
Figure 2-7
Salt Flat Bridge Alternative 2
Construction Limits & Easements



Bucktail Existing Site Layout



Bucktail Bridge Existing Profile



Bucktail Culvert Existing Profile

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT - CALIFORNIA
TRINITY RIVER DIVISION
TRINITY RIVER MAINSTEM FISHERY RESTORATION

TRINITY RIVER BRIDGES

BUCKTAIL BRIDGE
PROPOSED ACTION - RAISED ROAD AND CMP ARCH
PLAN AND PROFILE

DESIGNED ANNE MCDANIEL CHECKED NAME
DRAWN ANNE MCDANIEL TECH. APPR. NAME
PEER REVIEW NAME

F: Projects/10006 - Trinity River Bridge Replacement/GIS/Working_CAD_Files/Bucktail_Bridge_Existing.dwg Source: U.S. Bureau of Reclamation 03-25-03 tkoehler

North State Resources, Inc

Trinity River Bridges Project
Figure 2-8
Bucktail Bridge Existing Site Layout & Profile

The main channel of the Trinity River at this location is near the left bank; an overflow channel on the right is separated from the main channel by a levee extending several hundred feet upstream of the bridge. To prevent river water from flowing through the residential area right of the bridge during periods of high flows (8,000 cfs), the levee was breached to allow overflow into the right channel. An existing 30-inch diameter culvert is located beneath the overflow section of the road. It is assumed that this culvert was constructed to pass minor excess flows. The road over the culvert is approximately six feet lower than the elevation at the right end of the bridge. This area was reportedly overtopped and was under two-feet of water during the January 1, 1997 flood event, which has been estimated to be about 11,000 cfs. Riprap has been placed on the south side of the road, at the downstream side of the culvert, down slope of the roadway shoulder, to prevent erosion during overtopping.

For discussion purposes, the bridge left abutment is abutment 1, and the bridge right abutment is abutment 2. Riprap protection, part of the original design, protects the abutments from scour. Downstream of the bridge, the river turns sharply to the right. An 18-inch diameter culvert is visible at the southeast abutment wing wall.

Approach roadways are surfaced with asphalt concrete and vary from 20 to 32 feet wide with 3 foot wide shoulders. Horizontal alignment is on tangent and the roadway appears to be centered within the 80-foot easement at the bridge. Vertical alignment is on a descending grade from left to right with a sag vertical curve about 175 feet right of the bridge. This same area gets overtopped during higher flows. A parking area and fishing access is located at the southeast corner of the bridge (left abutment).

There are no overhead utilities and there do not appear to be underground utilities in the vicinity of the bridge.

Hydraulics

A hydraulic model was developed and calibrated to match measured water surface elevations upstream of the existing bridge using HEC-RAS. **Table 2-8** shows the water surface elevations for the flows being considered at the Bucktail Bridge site. These water surface elevations were calculated with the bridge substructure and superstructure in place. Also included in the hydraulic analysis was a determination of the maximum flow that can pass under the existing bridge without obstruction.

As shown on **Table 2-8**, the existing bridge low chord elevation is 1757.8 feet msl, with top of deck elevation 1762.2 feet msl at the right abutment. The hydraulic analysis indicates that the maximum unobstructed flow is 16,500 cfs, with water surface elevation of 1757.8 feet msl. However, the road right of the bridge starts to overtop when the flow reaches approximately 7,800 cfs.

The hydraulic analysis also included an estimate of the January 1, 1997 flood flow estimated to be 11,000 cfs upstream of Rush Creek. A cross section profile of the bridge during an 11,000 cfs flow would show a lower water surface elevation under the bridge than over the road above the culvert. The flow contraction at the bridge section causes a local water surface draw down. Flow passing under the bridge low chord may overtop the road above the culvert resulting in a weir flow condition. This situation apparently occurred during the January 1, 1997 flood, when eyewitnesses stated that the water was near but below the bridge low chord, but overtopping the road over the culvert by 1 to 2 feet. The hydraulic analysis shows that the water surface elevation for this flow is 1755.1 feet msl at the bridge and 1757.7 feet msl at the culvert, indicating that the flow passed under the low chord of the bridge, but the road right of the bridge was overtopped.

TABLE 2-8
FLOW DISCHARGES AT BUCKTAIL BRIDGE @ RM = 105.04
EXISTING BRIDGE INCLUDING DIP IN RIGHT APPROACH ROADWAY AND 30" CULVERT
TRINITY DAM DISCHARGES PLUS TRIBUTARY FLOWS

Flow description	LC = 1757.8 TOD = 1762.2 (cfs)	Water Surface Elevations at Bridge (ft)	Water Surface Elevations at 30" Culvert (ft)	Water Surface Elevations at RM 105.14
Maximum unobstructed flow	Q_{max} = 16,500	El. = 1757.8	El. = 1758.1	El. = 1760.4
Return Period Peak Flow (Annual with ROD)[a]	Q_{50} = 11,700	El. = 1755.4	El. = 1758.1	El. = 1759.4
	Q_{100} = 13,100	El.= 1755.9	El.= 1759.0	El.= 1760.2
Maximum Controlled - Flow Release[b]	Q_{MCR} = 15,000	El. = 1757.0	El. = 1760.2	El. = 1761.3
Estimated flow during 1/1/97 [c]	Q_{1997} = 11,000	El. = 1755.1	El. = 1757.7	El. = 1758.9
Typical maximum flow between July 22 to October 15 of each year[d]	Q = 450	El. = 1747.0		

Notes:

[a] Return Period Peak Flow – Annual with ROD – Combined winter and spring considering all 5 ROD water year type. Includes a possible 11,000 cfs release from Lewiston Dam in the spring.

[b] Maximum Controlled-Flow Release – 13,750 cfs is the maximum controlled release from Trinity Dam. Combining this flow with 100-year May/June peak tributary flow gives the flow value shown.

[c] Scott McBain of McBain and Trush provided flow estimates for the January 1, 1997 flood event.

[d] Lewiston Dam releases to the Trinity River based on the ROD. 450 cfs is the proposed flow release at Lewiston Dam between July 22 and October 15 of each year. 300 cfs is the proposed flow release at Lewiston Dam between October 16 and April 15 of each year.

LC = Bridge low chord, or bottom of beam elevation at lowest point under the bridge.

TOD = Top of Deck elevation. When top of deck elevation varies across the length of the bridge, the value shown in the table is the lowest top of deck elevation.

RM = Trinity River mile.

msl = Elevation above mean sea level (feet).

Q = Flow rate (cfs)

Scour Analysis

The DWR collected cross section survey data in the Trinity River from Lewiston Dam downstream to the Trinity River North Fork confluence during the few years prior to the January 1, 1997 flood. Cross section data in the vicinity of the Trinity River bridges was collected again during the 1999 to 2001 time-period. Comparison of the pre-1997 and post-1997 cross section profile plots indicates that no significant long-term channel degradation resulted from the January 1, 1997 flood. The 1997 flood flow was estimated to be 11,000 cfs at the Bucktail Bridge site. Short term localized scour may have occurred during this event, but was not sufficient to cause any abutment failure. Sediment deposits from the upstream bed quickly filled in any scour holes that may have developed at or near the bridge during the 1997 flood.

At the Bucktail site, the existing bridge geometry with the proposed low arch culvert to the west and the road over the culvert set at El. 1760.5 feet msl was used. The estimated 100-year with ROD-Annual flow at the Bucktail site is 13,100 cfs. Hydraulic computations for this flow determined that approximately 13,012 cfs passed under the bridge while the remaining 88 cfs passed through the culvert. Scour computations were performed only at the bridge, not at the culvert. Scour at the culvert would be insignificant for the 100-year flood due to relatively low flow velocities through the culvert (approximately 3.2 cfs). No substrate grain size data existed at this site, so the mean diameter (d_{50}) of the channel bed material was estimated from substrate samples collected at Salt Flat and Poker Bar.

Contraction and abutment scour were estimated at the bridge. The lowest bottom of scour hole elevation (approximately 1738 feet msl) occurs at about the center of the channel due to an estimated contraction scour depth of 2.0 feet. The depth of scour was computed as 7.7 feet at the left abutment and 6.2 feet at the right abutment. This resulted in bottom of scour hole elevations of 1741 feet msl at the left abutment and 1742 feet msl at the right abutment.

According to the BOR geology report (Sherer 2001) and CH2MHill drill logs, a continuous hard conglomerate layer exists at about 1742.5 feet msl in the vicinity of the left abutment. In the main channel, the elevation of this hard conglomerate layer is estimated to be 1738.5 feet msl. The hard conglomerate layer elevation at the right abutment is approximately 1740.5 feet msl. The hard conglomerate layer described is highly resistant to erosion, preventing scour below its surface.

Comparing the approximate hard conglomerate layer elevations to the estimated scour hole bottom elevations, indicates that the scour depth at the left abutment and in the main channel would likely be controlled by the erosion resistant layer. At the right abutment, scour might stop just above the elevation of the hard conglomerate layer for the 100-year flood flow.

Proposed Action (Raised Right Approach Roadway and Arch Culvert)

The Proposed Action for the Bucktail Bridge consists of raising the west approach roadway and replacing the existing 30 inch diameter culvert, approximately 215 feet right (west) of the existing bridge, with a 9-foot-wide by 4-foot-high arch structure (**Figure 2-9**). The arch culvert design will include a natural "bottom" and will increase the conveyance of flows under the Browns Mountain Road embankment. The design also includes raising the Browns Mountain roadway profile approximately 4.5 feet to an elevation of 1760.5 feet msl. The arch structure will have the capacity to convey approximately 80 cfs (existing culvert capacity is approximately 10 cfs). The existing roadway is overtopped during high flow events. The proposed roadway embankment and culvert will exhibit hydraulic characteristics similar to the existing system but will be overtopped only during extreme high-flow events greater than the 100-year event. The new culvert structure will be long enough so that the Browns Mountain Road width will remain 32 feet wide with 2:1 side slopes, and will include guardrails. The existing bridge will provide about 1.2 feet of freeboard for Q_{100} (13,100 cfs) at the low chord, which is on the bridge right abutment. The freeboard will be higher at the left abutment. For a flow of 15,000 cfs, the water surface elevation is approximately 0.4 feet below the low chord.

The process for arch culvert installation requires: excavation and removal of the existing culvert; excavation of dewatering trenches outside of culvert footing zone(s) (potentially, depending on seasonal groundwater variation); preparation of culvert "bottom" streambed and installation of footings and culvert panels and reconstruction of the roadway embankment.

The Proposed Action does not require any work within the active low-flow channel (Q = 450 cfs). A detour will be constructed around the existing road and culvert located to the west of the existing bridge, outside of the active low-flow channel. It is estimated that the detour will be in operation for a period of about 8 to 10 weeks. The detour will be built within the active flood plain, north of the existing road. To construct the detour, the contractor may use an excavator, a dozer or other equipment as needed. The existing bridge will remain in place and open to traffic at all times during construction, and will be used to provide access for homeowners and construction equipment and personnel. Keeping the existing bridge open will minimize impacts to the homeowners. Traffic control will be provided by the contractor and it is the contractor's responsibility to provide access for the homeowners. Temporary

closures of Browns Mountain Road and Bucktail Bridge may be needed at certain times during construction and near the completion of the work, when tying the new road alignment onto the existing road alignment.

Design Criteria

The following documents were referenced to develop the new culvert and roadway elevation design:

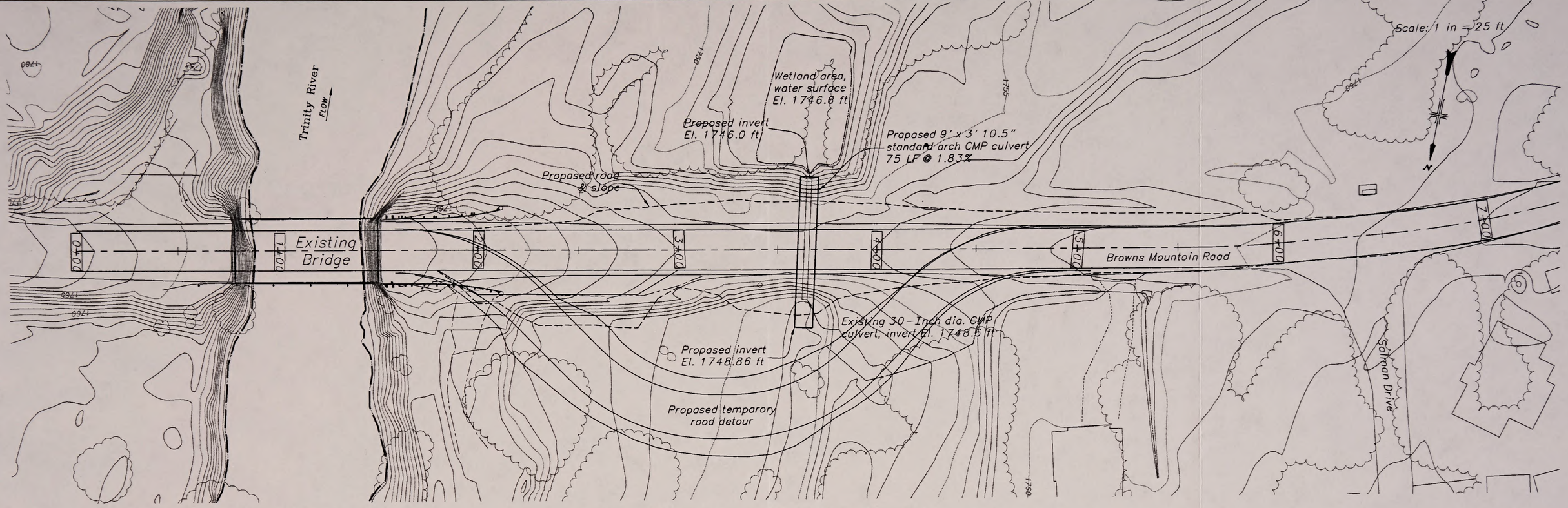
- AASHTO *A Policy on Geometric Design of Highways and Streets* (Fourth Edition, 2001);
- AASHTO *Standard Specification for Highway Bridges* (16th Edition, 1996, with Interims and Revisions by Caltrans);
- Caltrans and FHWA bridge planning and design manuals;
- Trinity County Transportation Department Design Guidelines, policies and requirements;
- Trinity County's Fire Safe Ordinance;
- Trinity County Decomposed Granite Grading Ordinance;
- *Estimation of 50-and 100-Year Tributary Accretion Floods; Lewiston Dam to Treadwell Bridge, Trinity River, California*, McBain and Trush, April 30, 2002; and
- *Trinity River Restoration Program – Trinity River Bridge Hydrologic Analysis, Draft Report,* BOR Technical Service Center, April 2003.*Trinity River Restoration Program, Trinity River Bridges: Hydraulic, Scour, and Riprap Sizing Analysis*, BOR Technical Service Center, April 9, 2003.

Hydraulics

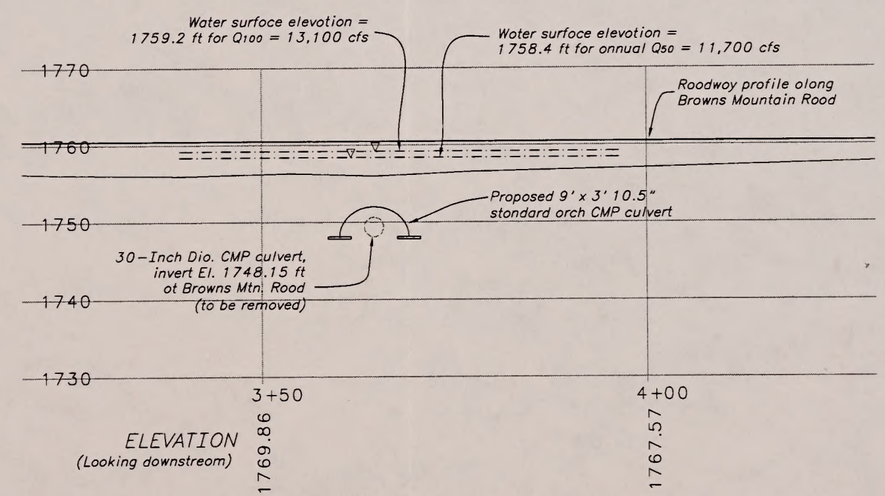
A hydraulic model was developed and calibrated to match measured water surface elevations upstream of the existing bridge using HEC-RAS. **Table 2-8 (Existing Elevations)** shows the water surface elevations for the flows being considered at the Bucktail Bridge site. These water surface elevations were calculated with the bridge substructure and superstructure in place. To evaluate comparative culvert capacity, a model was developed that calculates water surface elevations with a raised roadway and the existing 30-inch culvert. To ensure the approach road right of the bridge is not overtopped during high flows (for this comparative model), the right approach road was raised to1762.0 feet msl. To obtain appropriate water surface elevations the HEC-RAS analysis was redone. The comparative water surface elevations are shown in **Table 2-9**.

As can be seen by comparing **Table 2-8** with **Table 2-9**, the raised road acts like a dam and causes the flow that would normally be flowing over the road to be backed up. Therefore the water surface elevations at the culvert and bridge range from about 0.4 to 0.7 feet higher than the existing condition. The water surfaces at RM 105.14 did not change substantially in this comparative analysis.

To reduce the water surface elevations at the culvert and bridge (assuming the raised road condition west of the bridge), several models were run to determine the optimum size culvert. It was determined that replacement of the 30-inch culvert with a new 9-foot-wide by 4-feet-high arch culvert would provide near optimum water surface elevation results. For the Proposed Action (raised road and 9 x 4 arch culvert structure), the HEC-RAS hydraulic model was modified. The calculated water surface elevations are shown on **Table 2-10**



Bucktail Proposed Site Layout



Bucktail Proposed Culvert Profile

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT – CALIFORNIA
TRINITY RIVER DIVISION
TRINITY RIVER MAINSTEM FISHERY RESTORATION

TRINITY RIVER BRIDGES

BUCKTAIL BRIDGE

PROPOSED ACTION – RAISED ROAD AND CMP ARCH
PLAN AND PROFILE

DESIGNED ANNE MCDANIEL CHECKED NAME
DRAWN ANNE MCDANIEL TECH. APPR. NAME
PEER REVIEW NAME

F:\Projects/10006 - Trinity River Bridge Replacement/GIS/Working_CAD_Files/Bucktail_Bridge_Proposed.dwg Source: U.S. Bureau of Reclamation 04-14-03 tkoehler

North State Resources, Inc.

Trinity River Bridges Project

Figure 2-9
Bucktail Bridge Proposed Action
Site Layout & Profile

TABLE 2-9 FLOW DISCHARGES AT BUCKTAIL BRIDGE @ RM = 105.04 EXISTING BRIDGE, RAISED ROAD AND EXISTING 30" CULVERT TRINITY DAM DISCHARGES PLUS TRIBUTARY FLOWS				
Flow Description	**LC = 1757.8 TOD = 1762.2 (cfs)**	**Water Surface Elevations at Bridge (ft)**	**Water Surface Elevations at 30" Culvert (ft)**	**Water Surface Elevations at RM 105.14**
Return Period Peak Flow (Annual with ROD) [a]	Q_{50} = 11,700 Q_{100} = 13,100	El. = 1756.0 El.= 1756.6	El. = 1758.5 El.= 1759.4	El. = 1759.1 El.= 1760.0
Maximum Controlled - Flow Release [b]	Q_{MCR} = 15,000	El. = 1757.4	El. = 1760.7	El. = 1761.2
Estimated flow during 1/1/97 [c]	Q_{1997} = 11,000	El. = 1755.6	El. = 1757.9	El. = 1758.5

Notes:

[a] Return Period Peak Flow – Annual with ROD – Combined winter and spring considering all 5 ROD water year type. Includes a possible 11,000 cfs release from Lewiston Dam in the spring.

[b] Maximum Controlled-Flow Release – 13,750 cfs is the maximum controlled release from Trinity Dam. Combining this flow with 100-year May/June peak tributary flow gives the flow value shown.

[c] Scott McBain of McBain and Trush provided flow estimates for the January 1, 1997 flood event.

[d] Lewiston Dam releases to the Trinity River based on the ROD. 450 cfs is the proposed flow release at Lewiston Dam between July 22 and October 15 of each year. 300 cfs is the proposed flow release at Lewiston Dam between October 16 and April 15 of each year.

LC = Bridge low chord, or bottom of beam elevation at lowest point under the bridge.

TOD = Top of Deck elevation. When top of deck elevation varies across the length of the bridge, the value shown in the table is the lowest top of deck elevation.

RM = Trinity River mile.

msl = Elevation above mean sea level (feet).

Q = Flow rate (cfs)

Scour Analysis

At the Bucktail site, the existing bridge geometry with the proposed low arch culvert to the west and the road over the culvert set at 1760.5 feet msl was used. The estimated 100-year with ROD-Annual flow at the Bucktail site is 13,100 cfs. Hydraulic computations for this flow determined that approximately 13,012 cfs passed under the bridge while the remaining 88 ft^3/s passed through the culvert. Scour computations were performed only at the bridge, not at the culvert. Scour at the culvert would be insignificant for the 100-year flood due to relatively low flow velocities through the culvert (approximately 3.2 cfs). No substrate grain size data existed at this site, so the d_{50} of the channel bed material was estimated from substrate samples collected at Salt Flat and Poker Bar.

Contraction and abutment scour were estimated at the bridge. The lowest bottom of scour hole elevation (approximately 1738 feet msl) occurs at about the center of the channel due to an estimated contraction scour depth of 2.0 feet. The depth of scour was computed as 7.7 feet at the left abutment and 6.2 feet at the right abutment. This resulted in bottom of scour hole elevations of 1741 feet msl at the left abutment and 1742 feet msl at the right abutment.

According to the BOR geology report (Sherer 2001) and CH2MHill drill logs, a continuous hard conglomerate layer exists at about 1742.5 feet msl in the vicinity of the left abutment. In the main channel, the elevation of this hard

TABLE 2-10

FLOW DISCHARGES AT BUCKTAIL BRIDGE AT RM = 105.04

EXISTING BRIDGE, RAISED ROAD AND NEW 9X4 ARCH STRUCTURE

TRINITY DAM DISCHARGES PLUS TRIBUTARY FLOWS

Flow Description	LC = 1757.8 TOD = 1762.2 (cfs)	Water Surface Elevations at Bridge (ft)	Water Surface Elevations at 9x4 Arch Structure (ft)	Water Surface Elevations at RM 105.14
Return Period Peak Flow (Annual with ROD) [a]	Q_{50} = 11,700	El. = 1755.9	El. = 1758.4	El. = 1759.0
	Q_{100} = 13,100	El.= 1756.4	El.= 1759.2	El.= 1759.9
Maximum Controlled - flow Release [b]	Q_{MCR} = 15,000	El. = 1757.3	El. = 1760.5	El. = 1761.1
Estimated flow during 1/1/97 [c]	Q_{1997} = 11,000	El. = 1755.6	El. = 1757.9	El. = 1758.5

Notes:

[a] Return Period Peak Flow – Annual with ROD – Combined winter and spring considering all 5 ROD water year type. Includes a possible 11,000 cfs release from Lewiston Dam in the spring.

[b] Maximum Controlled-Flow Release – 13,750 cfs is the maximum controlled release from Trinity Dam. Combining this flow with 100-year May/June peak tributary flow gives the flow value shown.

[c] Scott McBain of McBain and Trush provided flow estimates for the January 1, 1997 flood event.

[d] Lewiston Dam releases to the Trinity River based on the ROD. 450 cfs is the proposed flow release at Lewiston Dam between July 22 and October 15 of each year. 300 cfs is the proposed flow release at Lewiston Dam between October 16 and April 15 of each year.

LC = Bridge low chord, or bottom of beam elevation at lowest point under the bridge.

TOD = Top of Deck elevation. When top of deck elevation varies across the length of the bridge, the value shown in the table is the lowest top of deck elevation.

RM = Trinity River mile.

msl = Elevation above mean sea level (feet).

Q = Flow rate (cfs)

conglomerate layer is estimated to be 1738.5 feet msl. The hard conglomerate layer elevation at the right abutment is approximately 1740.5 feet msl. The hard conglomerate layer described is highly resistant to erosion, preventing scour below its surface.

Comparing the approximate hard conglomerate layer elevations to the estimated scour hole bottom elevations, indicates that the scour depth at the left abutment and in the main channel would likely be controlled by the erosion resistant layer. At the right abutment, scour might stop just above the elevation of the hard conglomerate layer for the 100-year flood flow.

Slope Protection

The arch culvert structure and footings will be founded on native soil and may include cutoff walls and riprap to provide scour protection. Slope protection will be added at both existing bridge abutments. Slope protection will be provided on the downstream side of the raised roadway. The limits of slope protection are shown on the **Figure 2-9**. The rip-rap will be "1-ton" class for 2:1 slopes and/or "2-ton" class for 1.5:1 slopes (**Table 2-5**).

Drainage

The proposed profile, with a crowned cross section, provides sufficient gradient for drainage of roadway surfaces.

Right-of-Way

Temporary construction easements will be required on both sides of Browns Mountain Road to construct the detour, raise the existing road and construct the berm on the right bank.

Utilities

No overhead utilities were observed and there do not appear to be any underground utilities in the vicinity of the bridge. The County does not expect this project to impact the facilities and long-term access of various districts and utilities.

Bridge Railing

Guardrails will be provided on the roadway embankment above the arch structure and extend along the road for 50 feet on either side of the structure.

Construction Criteria and Methods

Construction Process Overview

The following is a list of potential construction activities that may be required for the Proposed Action at the Bucktail Bridge site. This list is not intended to be a precise or comprehensive construction schedule, and is not intended to show an exact sequence of construction activities. Some of these construction processes may temporarily affect property owner access.

- Construct a detour upstream of Browns Mountain Road to provide access for the contractor and Bucktail subdivision residents during construction. The detour may prevent recreational users from parking near Bucktail Hole.
- Additional parking areas will be identified and shown on the final drawings. Construction schedule will consider specific seasonal high-use periods.
- Remove pavement and excavate to remove existing culvert.
- Construct a new arch culvert structure.
- Raise and pave the new roadway profile; install slope protection as required.
- Tie new roadway into existing roadway.
- Open Browns Mountain Road to traffic.
- Remove detour, regrade and rehabilitate the site as necessary.

The existing bridge will remain in place and open to traffic at all times during construction, and will be used to provide access for homeowners and construction equipment and personnel. Keeping the existing bridge open will minimize impacts to the homeowners. The contractor will provide traffic control and it is the contractor's responsibility to provide access for the homeowners. Temporary closures of Browns Mountain Road and Bucktail Bridge may be needed at certain times during construction and near the completion of the work, when tying the new road alignment onto the existing road alignment.

Specifications

Construction specifications will be developed by the BOR, and will meet Caltrans Standard Specifications, and the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects.

Construction Activities

A construction detour around the existing road and culvert is required for this alternative. It is estimated that the detour will be in operation for approximately 8 to 10 weeks. Slope protection will be provided on the downstream side of the right approach roadway to protect the new roadway embankment from flows that may overtop and may erode the road.

Instream Construction

Construction activities are not anticipated within the active low-flow channel (Q = 450 cfs). A seep well may be constructed outside the active low-flow channel to provide construction "make-up" water for all construction activities. A backhoe may be used to excavate and backfill soils at the seep well site. The well may consist of large diameter, perforated pipe placed vertically in the soil to a depth below the groundwater level. The annular space around the pipe will be filled with large aggregate to promote groundwater flow to the well.

If instream construction measures are unavoidable and require implementation outside of the June 15th to September 15th dry-season construction window, all potential salmonid spawning habitat will be isolated from use prior to September 1st. A qualified fisheries biologist will use a conservative definition of suitable spawning area and will ensure that these areas are protected from use by appropriate exclusionary materials (e.g., anti-spawning mats or fencing). This effort will avoid any impacts to early fish life stages that are immobile and very sensitive to the crushing effects of heavy equipment operation on the stream bottom. These materials will be sufficiently anchored to the stream bottom during the instream work period to preclude spawning anadromous fish from digging redds in the work area. They will be removed after completion of instream work and prior to flood season. They will be anchored sufficiently to ensure that an unplanned high flow release from the dam will not cause them to release from their anchorage and create a litter problem.

Dewatering Activities

All material and water required for construction of arch culvert and embankment will be contained and disposed of off-site by the contractor at an approved and appropriate disposal site. The specifications will instruct the contractor that no cement fines, drilling fluids or contaminated water will be allowed to enter the ground or stream. The containment and disposal system has not been determined, since equipment to do this type of work varies from contractor to contractor.

Dewatering activities will occur at the location of new arch structure construction and possibly other embankment or detour locations. Dewatering may include installation of temporary dikes and/or cutoff walls and the use of pumps to lower the water table in the immediate vicinity of the construction. Water pumped from the construction site will be stored in a settling tank or containment/infiltration basin to remove turbidity before discharging to the wetland area below the construction site.

Traffic Control / Detour

The contractor will be responsible for providing temporary access around the site. The proposed detour location and

extents are shown on **Figure 2-9**. The detour will be designed to safely accommodate standard residential or commercial vehicles. The contractor will provide signage and traffic control to safely detour vehicular traffic around the site. Access may be temporarily denied around the site depending on construction activities. In the event of anticipated closures, the contractor will notify residents in advance of the closure(s).

The ADT at the Bucktail Bridge is 170 vehicles per day; therefore the detour will be designed for the following criteria:

- Two 11-foot-wide traffic lanes
- 20 mph design speed
- 90-foot minimum radius curves
- Paved roadway surface

Contractor Staging and Storage Areas

The existing bridge will provide primary site access. Contractor staging areas are expected to be available within the temporary easement areas. The temporary construction easement areas are shown on drawing **Figure 2-10**. The contractor will be required to place lath or other suitable markers at the edge of the temporary construction easements to show workmen the limits they must stay within. The recommended main contractor staging area is located within lands administered by the BLM, located just northeast of the existing Bucktail Bridge site.

Air Pollution and Dust Control

Efforts will be made to minimize air pollution. The BOR specifications require that the contractor comply with all applicable air pollution control rules, regulations, ordinances, and statutes. Contract documents will specify that the contractor will be responsible to limit dust by watering construction site areas used by trucks and vehicles.

Fill Import and Export

Embankment material is typically a well-graded mixture of clayey sand (SC), sandy lean clay (CL), lean clay (CL), silt (ML), or silty sand (SM). Embankment material gradation typically has a minimum of 20 percent by dry weight, of soil particles passing a No. 200 United States Standard sieve, with a maximum particle size of 4 inches in maximum dimension. The material shall be obtained from on-site excavation or other approved sources and will be free from chemical contamination, vegetation, roots, trash, debris, or other unsatisfactory material. All lumps, clods, and oversize particles shall be removed.

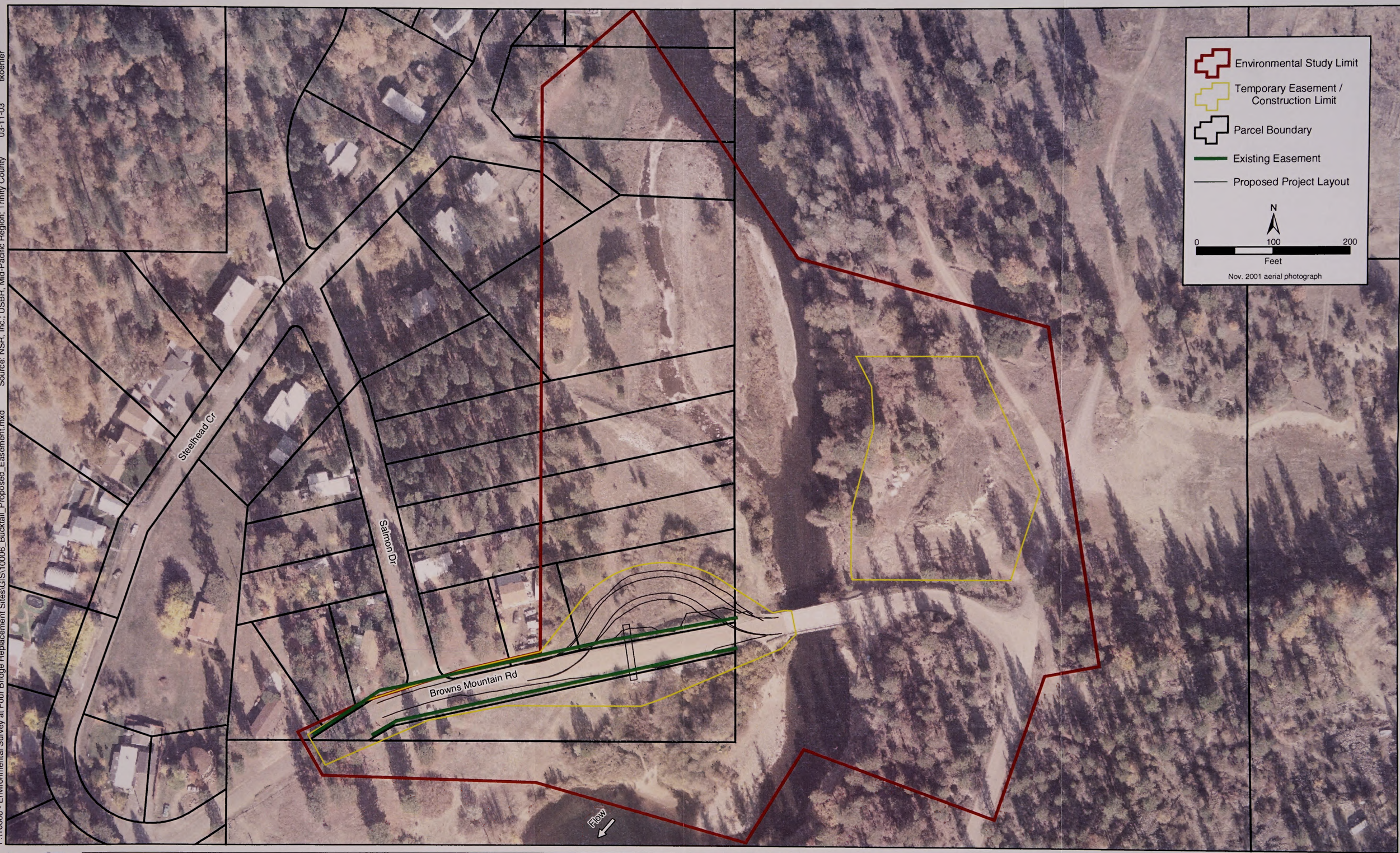
When rip-rap for slope protection is required, the rock used for rip-rap shall be hard, dense, and durable. Either quarried rock or boulders may be used for rip-rap. Since no rip-rap is available onsite, all material used for slope protection will be imported. The rock in rip-rap shall be reasonably well graded from the maximum size down to the minimum size as previously shown in **Table 2-5**, Rock Sizes and Rip-rap Thickness.

An estimated 850 cubic yards of embankment material will be required for the detour and approximately 1000 cubic yards of embankment and structural backfill are required for the raised roadway. This material will be hauled from an approved borrow source. An estimated 100 cubic yards of rip-rap will be required for slope protection.

Water Pollution Prevention

The contractor shall also implement water pollution control measures that conform to applicable and appropriate permits. The contractor will be required to use extreme care to prevent dirt, debris and miscellaneous demolition byproducts from entering the stream. Some of the key water pollution control measures that shall be implemented are listed below:

- The contractor shall exercise every reasonable precaution to protect the Trinity River from pollution with fuels, oils, bitumen, calcium chloride, and other harmful materials and shall conduct and schedule operations to avoid or minimize muddying and silting of the river. Care shall be exercised to preserve roadside vegetation beyond the limits of construction.
- Water pollution control work is intended to provide prevention, control and abatement of water pollution to the Trinity River, and shall consist of constructing those facilities that may be shown on the plans, specified herein or in the special provisions, or directed by the Engineer.
- The contractor shall provide temporary water pollution control measures, including but not limited to, dikes, basins, ditches, and applying straw and seed, which become necessary because of the contractor's operations. The contractor shall coordinate water pollution control work with all other work done on the contract.
- Before starting any work on the project, the contractor shall develop an agency-approved program to control water pollution effectively during construction of the project. The program shall show the schedule for the erosion control work included in the contract and for all water pollution control measures that the contractor proposes to take in connection with construction of the project to minimize the effects of the operations upon adjacent streams and other bodies of water. The contractor shall not perform any clearing and grubbing or earthwork on the project until the program has been accepted.
- Where erosion that will cause water pollution is probable due to the nature of the material or the season of the year, the contractor's operations shall be so scheduled that permanent erosion control features will be installed concurrently with or immediately following grading operations.
- Nothing in the terms of the contract shall relieve the contractor of the responsibility for compliance with Sections 5650, 1601 and 12015 of the Fish and Game Code, or other applicable statutes relating to prevention or abatement of water pollution.
- Where working areas encroach on live streams, barriers adequate to prevent the flow of muddy water into streams shall be constructed and maintained between working areas and streams. During construction of the barriers, muddying of streams shall be held to a minimum.
- Water containing mud or silt from aggregate washing or other operations shall be treated by filtration, or retention in a settling pond, or ponds, adequate to prevent muddy water from entering live streams.
- Oily or greasy substances originating from the contractor's operations shall not be allowed to enter or be placed where they will later enter a live stream.
- Portland cement or fresh Portland cement concrete shall not be allowed to enter flowing water of streams.
- Material derived from roadway work shall not be deposited in a live stream channel where it could be washed away by high stream flows.
- Where there is possible migration of anadromous fish in streams affected by construction on the project, the contractor shall conduct work operations that allow free passage of migratory fish.



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North State Resources, Inc.

Trinity River Bridges Project

Figure 2-10
Bucktail Bridge Proposed Action
Construction Limits & Easements

Utility Relocation

No utilities will be impacted under this proposal. No relocation will be necessary.

Tentative Schedule

The project schedule is based on a Contract Award date in the spring or summer of 2004. Mobilization would begin in the summer of 2004 at the Bucktail site. The majority of the scheduled work would be completed within 90 calendar days of mobilization.

Construction associated with the Trinity River Bridges Project cannot begin until the environmental document has been adopted by the BOR, the BLM, and the County; preparation of final design, plans, specifications, and cost estimates; acquisition of ROW; acquisition of permits; and design approvals from state and federal agencies.

Alternative 1 Raise Existing Levee

The Alternative 1 action for the Bucktail Bridge site consists of raising the existing levee on the right bank of the river upstream of the existing bridge (**Figure 2-11**). The existing "arc-shaped" levee extends upstream approximately 450 feet, with an average top elevation of 1759 feet msl. This alternative proposes raising the levee to an elevation approximately 0.5 feet above the calculated water surface for the Q_{100} (spring with ROD) flow event. This design increases the height of approximately 200 lineal feet of the existing levee to an approximate elevation of 1759.5 feet msl; extends the length of the existing levee by 50 feet upstream; and fills in the existing "notch" in the levee **(Figure-2-11)**.

The notch was constructed for flood control purposes during a prior year flood event. Under this alternative, no modifications to Browns Mountain Road would be required. The modeled flows would be forced to pass under the bridge. No portion of the modeled flows would spill over the levee into the wetland area north of the road.

The existing bridge will provide about 1.0 feet of freeboard for Q_{100} (13,100 cfs) at the low chord, which is on the right abutment. The freeboard will be higher at the left abutment. For a flow of 15,000 cfs, the water surface elevation is approximately 0.1 feet below the low chord.

The nominally 12-foot-wide levee (measured across the top) will be of typical construction using an earth core armored with rip-rap.

Design Criteria

The following documents were referenced to develop the modified levee design:

- *Estimation of 50-and 100-Year Tributary Accretion Floods; Lewiston Dam to Treadwell Bridge, Trinity River, California*, McBain and Trush, April 30, 2002
- *Trinity River Restoration Program – Trinity River Bridge Hydrologic Analysis, Draft Report*, BOR Technical Service Center, April 2003
- *Trinity River Restoration Program, Trinity River Bridges: Hydraulic, Scour, and Riprap Sizing Analysis*, BOR Technical Service Center, April 9, 2003

Hydraulics

A hydraulic model was developed and calibrated to match measured water surface elevations upstream of the existing bridge using HEC-RAS. **Table 2-8 (No-Action)** shows the water surface elevations for the flows being considered at the Bucktail Bridge site. These water surface elevations were calculated with the bridge substructure and superstructure in place. Also included in the hydraulic analysis was a determination of the maximum flow that can pass under the existing bridge without obstruction.

To ensure the levee is not overtopped during high flows, it will be raised to an elevation of approximately 1759.5 feet msl. The raised levee will be constructed above the existing levee a maximum of approximately 4 feet. To obtain appropriate water surface elevations for the alternative action, using the flows given in **Table 2-8**, the HEC-RAS analysis was redone. The new water surface elevations are shown in **Table 2-11**.

TABLE 2-11

FLOW DISCHARGES AT BUCKTAIL BRIDGE @ RM = 105.04

EXISTING BRIDGE, EXISTING ROAD AND 30" CULVERT, RAISED LEVEE

TRINITY DAM DISCHARGES PLUS TRIBUTARY FLOWS

Flow description	LC = 1757.8 TOD = 1762.2 (cfs)	Water Surface Elevations at Bridge (ft)	Water Surface Elevations at RM 105.14 (ft)
Return Period Peak Flow (Annual with ROD) [1]	Q_{50} = 11,700	El. = 1756.1	El. = 1759.3
	Q_{100} = 13,100	El.= 1756.8	El.= 1760.2
Maximum Controlled - Flow Release [2]	Q_{MCR} = 15,000	El. = 1757.7	El. = 1761.5
Estimated flow during 1/1/97 [3]	Q_{1997} = 11,000	El. = 1755.8	El. = 1758.8

Notes:

[a] Return Period Peak Flow – Annual with ROD – Combined winter and spring considering all 5 ROD water year type. Includes a possible 11,000 cfs release from Lewiston Dam in the spring.

[b] Maximum Controlled-Flow Release – 13,750 cfs is the maximum controlled release from Trinity Dam. Combining this flow with 100-year May/June peak tributary flow gives the flow value shown.

[c] Scott McBain of McBain and Trush provided flow estimates for the January 1, 1997 flood event.

[d] Lewiston Dam releases to the Trinity River based on the ROD. 450 cfs is the proposed flow release at Lewiston Dam between July 22 and October 15 of each year. 300 cfs is the proposed flow release at Lewiston Dam between October 16 and April 15 of each year.

LC = Bridge low chord, or bottom of beam elevation at lowest point under the bridge.

TOD = Top of Deck elevation. When top of deck elevation varies across the length of the bridge, the value shown in the table is the lowest top of deck elevation.

RM = Trinity River mile.

msl = Elevation above mean sea level (feet).

Q = Flow rate (cfs)

Scour Analysis

The DWR collected cross section survey data in the Trinity River from Lewiston Dam downstream to the Trinity River North Fork confluence during the few years prior to the January 1, 1997 flood. Cross section data in the vicinity of the Trinity River bridges was collected again during the 1999 to 2001 time-period. Comparison of the pre-1997 and post-1997 cross section profile plots indicates that no significant long-term channel degradation resulted from the January 1, 1997 flood. The 1997 flood flow was estimated to be 11,000 cfs at the Bucktail Bridge site. Short term localized scour may have occurred during this event, but was not sufficient to cause any abutment failure.

Bucktail Alternative 1 Site Layout

F:\Projects\10006 - Trinity River Bridge Replacement\GIS\Working_CAD_Files\Bucktail_Alt1.dwg Source: U.S. Bureau of Reclamation 03-27-03 tkoehler

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Figure 2-11
Bucktail Bridge Alternative 1
Site Layout

Sediment deposits from the upstream bed quickly filled in any scour holes that may have developed at or near the bridge during the 1997 flood.

The existing bridge geometry with the proposed low arch culvert to the west and the road over the culvert set at 1760.5 feet msl was used. The estimated 100-year with ROD-Annual flow at the Bucktail site is 13,100 cfs. Hydraulic computations for this flow determined that approximately 13,012 cfs passed under the bridge while the remaining 88 cfs passed through the culvert. Scour computations were performed only at the bridge, not at the culvert. Scour at the culvert would be insignificant for the 100-year flood due to relatively low flow velocities through the culvert (approximately 3.2 cfs). No substrate grain size data existed at this site, so the d_{50} of the channel bed material was estimated from substrate samples collected at Salt Flat and Poker Bar.

Contraction and abutment scour were estimated at the bridge. The lowest bottom of scour hole elevation (approximately 1738 feet msl) occurs at about the center of the channel due to an estimated contraction scour depth of 2.0 feet. The depth of scour was computed as 7.7 feet at the left abutment and 6.2 feet at the right abutment. This resulted in bottom of scour hole elevations of 1741 feet msl at the left abutment and 1742 feet msl at the right abutment.

According to the BOR geology report (Sherer 2001) and CH2MHill drill logs, a continuous hard conglomerate layer exists at about 1742.5 feet msl in the vicinity of the left abutment. In the main channel, the elevation of this hard conglomerate layer is estimated to be 1738.5 feet msl. The hard conglomerate layer elevation at the right abutment is approximately 1740.5 feet msl. The hard conglomerate layer described is highly resistant to erosion, preventing scour below its surface.

Comparing the approximate hard conglomerate layer elevation to the estimated scour hole bottom elevation indicate that the scour depth at the left abutment and in the main channel would likely be controlled by the erosion resistant layer. At the right abutment, scour might stop just above the elevation of the hard conglomerate layer for the 100-year flood flow.

Alignment and Design Speed

There will be no changes to Browns Mountain Road alignment under this alternative.

Roadway Approaches

There will be no changes to the bridge approaches, or to Browns Mountain Road alignment under this alternative.

Bridge Replacement

The existing bridge is in good condition and will remain in place. The bridge will not provide 2 feet of freeboard for the proposed flows, but will pass all flows considered under this action without obstruction.

Slope Protection

The levee embankment will be founded on existing levee earthwork and will include rip-rap to provide scour protection. Slope protection will be added at both existing bridge abutments. The limits and size of slope protection will be shown on final drawings. The rip-rap will be "1-ton" class for 2:1 slopes and/or "2-ton" class for 1.5:1 slopes (**Table 2-5**).

Drainage

The levee construction will not alter the existing drainage patterns at the site.

Right-of-Way

Construction easements will be required on private and BLM properties. **Figure 2-12** identifies areas required for staging areas. The levee construction will not disrupt traffic on Browns Mountain Road. Permanent easements will be required where the new levee is extended upstream.

Utilities

No overhead utilities were observed and there do not appear to be any underground utilities in the vicinity of the bridge. The County does not expect this project to impact the facilities or long-term access of various districts and utilities.

Construction Criteria and Methods

Construction Process Overview

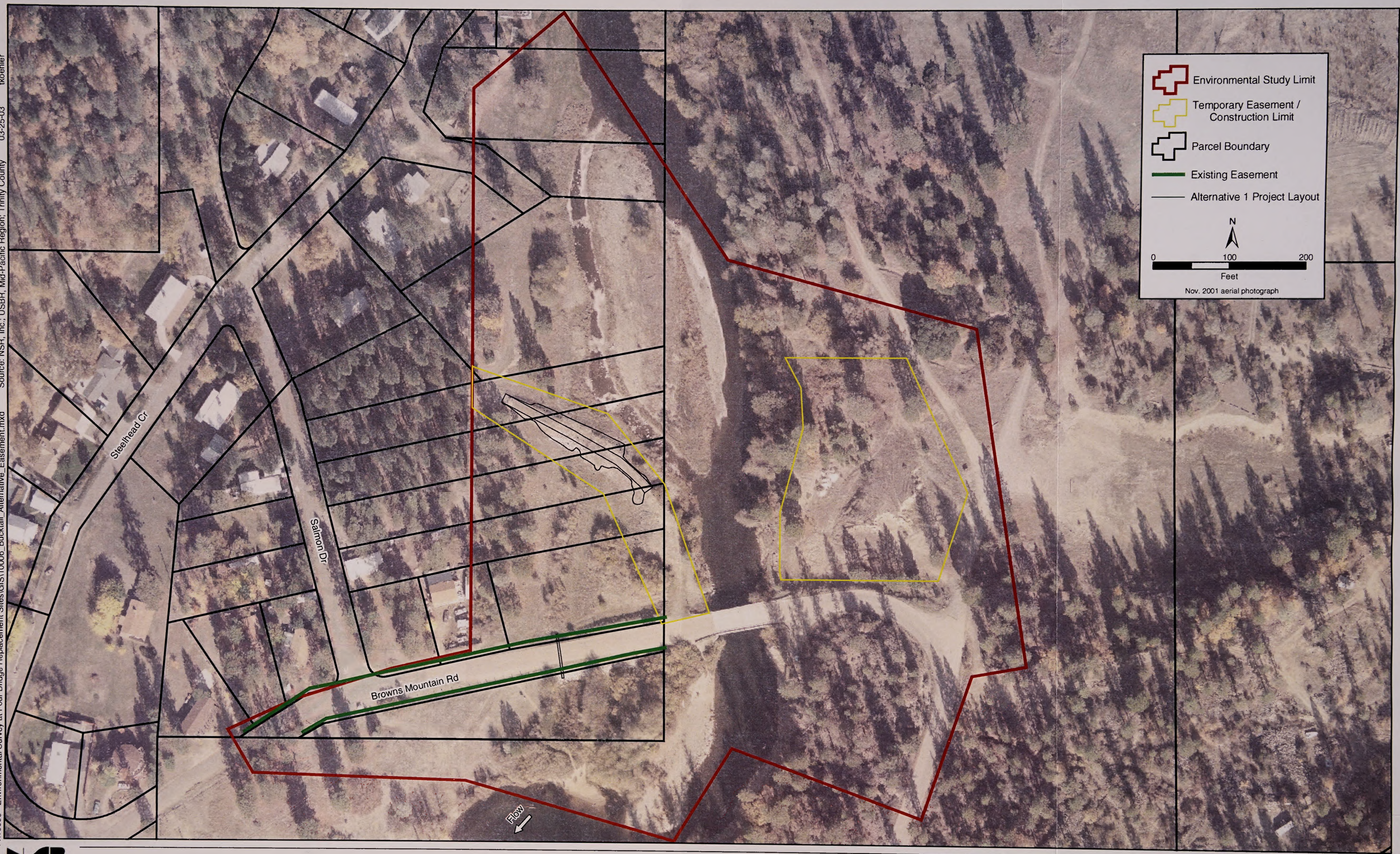
The following is a list of potential construction activities that may be required for Alternative 1 at the Bucktail Bridge site. This list is not intended to be a precise or comprehensive construction schedule, and is not intended to show an exact sequence of construction activities. Some of these construction processes may temporarily affect property owner access.

- Mobilize contractor and construct access to levee near right abutment
- Clear and grub existing levee
- Earthwork at existing levee – construct raised embankment
- Install riprap armor on embankment
- Regrade access ramp and revegetate as necessary

The existing bridge will remain in place and open to traffic at all times during construction, and will be used to provide access for homeowners and construction equipment and personnel. Keeping the existing bridge open will minimize impacts to the homeowners. The contractor will provide traffic control and it is the contractor's responsibility to provide access for the homeowners. Temporary closures of Browns Mountain Road and Bucktail Bridge are not anticipated under Alternative 1.

Specifications

Construction specifications will be developed by the BOR, and will meet Caltrans Standard Specifications, and the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects.



F:\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Bucktail_Alternative_Easement.mxd Source: NSR, Inc.; USBR, Mid-Pacific Region; Trinity County 03-25-03 tkoehler

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Figure 2-12
Bucktail Bridge Alternative 1
Construction Limits & Easements

Construction Activities

Construction activities will be conducted in association with levee construction. The existing transportation system will be used to provide access to the construction site.

Instream Construction

Construction activities will include placement of rip-rap on the inside bank of the levee. Construction is not anticipated to impact the active low-flow channel (Q = 450 cfs). If instream construction measures are unavoidable and require implementation outside of the June 15th to September 15th dry-season construction window, all potential salmonid spawning habitat will be isolated from use prior to September 1st. A qualified fisheries biologist will use a conservative definition of suitable spawning area and will ensure that these areas are protected from use by appropriate exclusionary materials (e.g., anti-spawning mats or fencing). This effort will avoid any impacts to early fish life stages that are immobile and very sensitive to the crushing effects of heavy equipment operation on the stream bottom. These materials will be sufficiently anchored to the stream bottom during the instream work period to preclude spawning anadromous fish from digging redds in the work area. They will be removed after completion of instream work and prior to flood season. They will be anchored sufficiently to ensure that an unplanned high flow release from the dam will not cause them to release from their anchorage and create a litter problem. A seep well may be constructed outside the active low-flow channel to provide construction "make-up" water for all construction activities. A backhoe may be used to excavate and backfill soils at the seep well site. The well may consist of large diameter, perforated pipe placed vertically in the soil to a depth below the groundwater level. The annular space around the pipe will be filled with large aggregate to promote groundwater flow to the well.

Dewatering Activities

Dewatering activities are not anticipated under this Alternative.

Traffic Control / Detour

The contractor will provide traffic control and is responsible for providing access for the homeowners. Temporary closures of Browns Mountain Road and Bucktail Bridge are not anticipated under this Alternative.

Contractor Staging and Storage Areas

Primary site access will be from Browns Mountain Road near the right abutment of the existing bridge. Contractor staging areas are expected to be available within the temporary easement areas. The temporary construction easement areas are shown on **Figure 2-12**. The contractor will be required to place lath or other suitable markers at the edge of the temporary construction easements to show workmen the limits they must stay within. The recommended main contractor staging area is located within lands administered by the BLM, located just northeast of the existing Bucktail Bridge site.

Air Pollution and Dust Control

Efforts will be made to minimize air pollution. The BOR specifications require that the contractor comply with all applicable air pollution control rules, regulations, ordinances, and statutes. Contract documents will specify that the contractor will be responsible to limit dust by watering construction site areas used by trucks and vehicles.

Fill Import and Export

Embankment material is typically a well-graded mixture of clayey sand (SC), sandy lean clay (CL), lean clay (CL), silt (ML), or silty sand (SM). Embankment material gradation typically has a minimum of 20 percent by dry weight, of soil particles passing a No. 200 United States Standard sieve, with a maximum particle size of 4 inches in maximum dimension. The material shall be obtained from on-site excavation or other approved sources and will be free from chemical contamination, vegetation, roots, trash, debris, or other unsatisfactory material. All lumps, clods, and oversize particles shall be removed.

When rip-rap for slope protection is required, the rock used for rip-rap shall be hard, dense, and durable. Either quarried rock or boulders may be used for rip-rap. Since no rip-rap is available onsite, all material used for slope protection will be imported. The rock in rip-rap shall be reasonably well graded from the maximum size down to the minimum size as previously shown in **Table 2-5**.

An estimated 100 cubic yards of embankment material will be required for levee construction. This material will be hauled from an approved borrow source. An estimated 300 cubic yards of rip-rap will be required for slope protection.

Water Pollution Prevention

The contractor shall also implement the same water pollution control measures that were previously identified for the Proposed Action.

Utility Relocation

No utilities will be impacted under this proposal. No relocation will be necessary

Tentative Schedule

The project schedule is based on a Contract Award date in the spring or summer of 2004. Mobilization would begin summer, 2004 at the Bucktail site. The majority of the scheduled work would be completed within 90 calendar days of mobilization

Construction associated with the Trinity River Bridges Project cannot begin until the environmental document has been adopted by the BOR, the BLM, and the County; preparation of final design, plans, specifications, and cost estimates; acquisition of ROW; acquisition of permits; and design approvals from state and federal agencies

2.4.3 POKER BAR

No-Action Alternative

Under the No-Action (No Project) Alternative, the BOR, the BLM, and the County would not proceed with the replacement of the Poker Bar bridges and roadway improvements at the Poker Bar site. The No-Action (No-Project) Alternative is the existing condition of the bridge and ancillary features at the Poker Bar project site. The following subsection provides a detailed description of the existing features and the associated conditions.

The left channel bridge deck consists of 4-inch-thick by 12-inch-wide wood planks, placed perpendicular to the direction of traffic. Two rows of three 4-inch-thick by 12-inch-wide running boards are placed longitudinally on top of the deck. The running boards distribute wheel loads to the bridge deck. The age of the existing wood decking and running boards is unknown, but appear in good condition. The right channel bridge deck is paved with asphalt concrete pavement. The bridge rail on both bridges consists of steel posts and a single steel cable strung through holes near the top of the posts.

Existing Conditions

The existing Poker Bar bridges, located about 10 miles downstream of Lewiston Dam, span the Trinity River near RM 102, halfway between the towns of Lewiston and Douglas City, California. The bridges are located on Bridge Road, which is 1.5 miles from State Highway 299 (**Figure 2-13**). Each of these single span bridges are privately owned, and consist of two railroad flatcar structures that cross two separate channels of the Trinity River. The river bifurcates and flows around an island (Poker Bar) consisting of a very large channel bar deposit. The bridges connect Poker Bar Road with Reo Lane, and Quad P Road and serve 77 parcels on the right bank of the river. The left channel is considered the main channel and for discussion purposes, the bridges are described looking downstream.

The existing structure over the left channel is 52-feet-long, 20-feet-wide and constructed with twin side-by-side railroad flatcars, supported by concrete abutments on steel "H" piles. The concrete abutments contain two riveted steel caissons, which appear to be remnants of a previous bridge structure. Abutment 2 wing walls are severely cracked, with a large tree growing right next to the north wing wall. Further evidence that this bridge replaced an existing bridge is the presence of large concrete slabs in the channel just downstream of the existing bridge. The superstructure depth is approximately 2.5 feet, and the low chord elevation is approximately 1726.2 feet msl near the west end of the bridge (abutment 2).

The existing structure over the right channel is 87 feet long, 18 feet wide and constructed with twin side-by-side railroad flatcars, supported on abutments consisting of four steel "H" piles and a timber log. This bridge does not have a concrete abutment or wing walls of any kind. The superstructure depth is approximately 3 feet and the low chord elevation is approximately 1726.7 feet msl near the east end of the bridge (abutment 1). **Table 2-12** shows top of approach, top of deck, and top of structure elevations for the existing bridges.

TABLE 2-12
APPROACH, TOP OF DECK, AND TOP OF STRUCTURE ELEVATIONS – POKER BAR BRIDGE

Structure	Left Approach/top of deck elevation (ft)	Low chord elevation (ft)	Right approach/top of deck elevation (ft)	Top of Structure elevation (ft)[a]
Existing Left channel bridge	1729.5	1726.2	1728.8	1731.0
Existing Right channel bridge	1730.4	1726.7	1729.7	1732.0

Notes: [a] Elevation shown is top of bridge rail for the existing bridge

Typically, approach road elevations are the same as the top of bridge deck elevations. These elevations are shown on **Figure 2-13**.

The existing bridges load ratings are unknown. They do not appear to have been designed for seismic loads, and bridge railings do not meet current standards.

TABLE 2-13
FLOW DISCHARGES AT POKER BAR BRIDGES @ RM = 102.38
EXISTING BRIDGE INCLUDING SUPERSTRUCTURE
TRINITY DAM DISCHARGES PLUS TRIBUTARY FLOWS

Flow description	LC = 1726.2 TOD = 1728.8 (cfs)	Water Surface Elevations (ft)
Maximum unobstructed flow	Q_{max} = 11,500	El. = 1725.4
Return Period Peak Flow (Annual with ROD) [a]	Q_{50} = 18,500 Q_{100} = 23,400	El. = 1730.1 El.= 1731.5
Maximum Controlled - Fflow Release [b]	Q_{MCR} = 15,500	El. = 1729.6
Estimated flow during 1/1/97 [c]	Q_{1997} = 15,000	El. = 1729.5
Typical maximum flow between July 22 to October 15 of each year [d]	Q = 450	El. = 1716.0

Notes:

[a] Return Period Peak Flow – Annual with ROD – Combined winter and spring considering all 5 ROD water year type. Includes a possible 11,000 cfs release from Lewiston Dam in the spring.

[b] Maximum Controlled-Flow Release – 13,750 cfs is the maximum controlled release from Trinity Dam. Combining this flow with 100-year May/June peak tributary flow gives the flow value shown.

[c] Scott McBain of McBain and Trush provided flow estimates for the January 1, 1997 flood event.

[d] Lewiston Dam releases to the Trinity River based on the ROD. 450 cfs is the proposed flow release at Lewiston Dam between July 22 and October 15 of each year. 300 cfs is the proposed flow release at Lewiston Dam between October 16 and April 15 of each year.

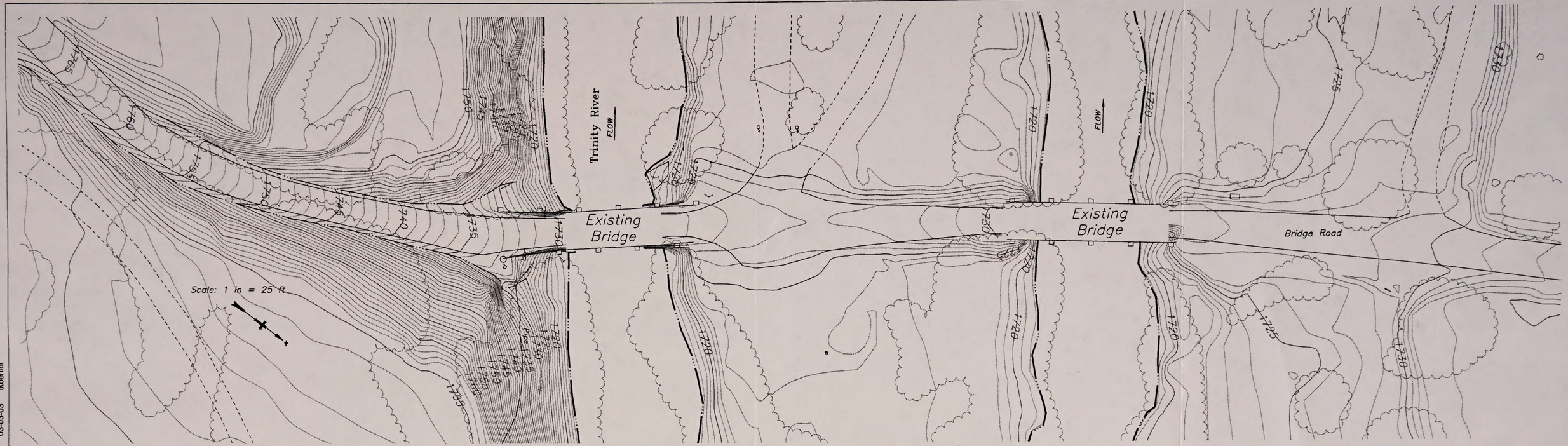
LC = Bridge low chord, or bottom of beam elevation at lowest point under the bridge.

TOD = Top of Deck elevation. When top of deck elevation varies across the length of the bridge, the value shown in the table is the lowest top of deck elevation.

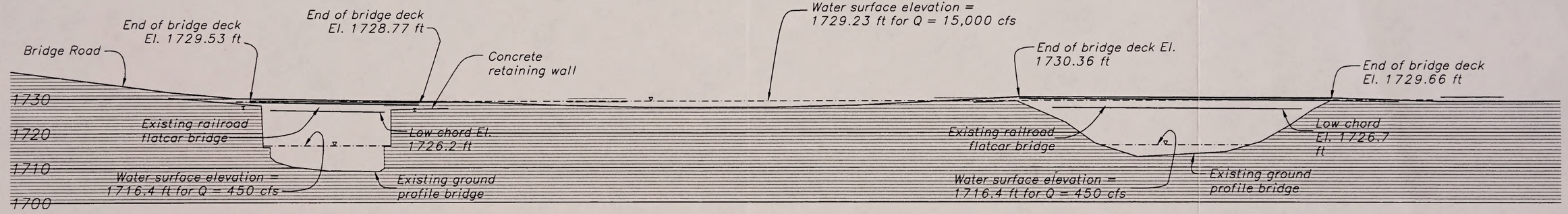
RM = Trinity River mile.

msl = Elevation above mean sea level (feet).

Q = Flow rate (cfs)



Poker Bar Bridges Existing Site Layout



ELEVATION
(Looking downstream)

LEFT BRIDGE (SOUTH)

RIGHT BRIDGE (NORTH)

Scale: 1 in = 15 ft

Poker Bar Bridges Existing Profile

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT – CALIFORNIA
TRINITY RIVER DIVISION
TRINITY RIVER MAINSTEM FISHERY RESTORATION

TRINITY RIVER BRIDGES

POKER BAR ROAD BRIDGES
PROPOSED ACTION – TRUSS BRIDGES
PLAN AND PROFILE

DESIGNED Jesus G. Romero CHECKED CHECKED
DRAWN Jesus G. Romero TECH. APPR. TECH. APPROVAL
APPROVED APPROVED
PCER REVIEW (TITLE)

DENVER, COLORADO

F:\Projects\10006 - Trinity River Bridge Replacement\GIS\Working_CAD_Files\Poker-Brdg-ups.dwg Source: U.S. Bureau of Reclamation 03-03-03 tkoehler

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Figure 2-13
Poker Bar Bridges Existing Site Layout & Profile

The left approach along the curve is located in a cut slope. The existing horizontal and vertical alignments are shown on **Figure 2-13**. Access to Poker Bar (island) is via the roadway between the bridges.

There are no overhead utilities and there do not appear to be underground utilities in the vicinity of the bridges. A private drinking water tap is present about 50 feet upstream of the left channel bridge on Poker Bar and an access to intake fire suppression water is located about 50 feet downstream. A white PVC pipe is attached underneath the timber decking, along the north face of the left channel bridge, and crosses to the south of the bridge at abutment 2. Surveys have indicated that this PVC pipe is abandoned.

Hydraulics

A HEC-RAS hydraulic model was developed and calibrated to match measured water surface elevations upstream of the existing bridge. A HEC-RAS model was created to obtain design water surface elevations for the range of anticipated flows. **Table 2-13** lists the anticipated flows and corresponding water surface elevations for the existing condition. These water surface elevations were calculated with the bridge substructures and superstructures in place. Also included in the hydraulic analysis was a determination of the maximum flow that can pass under the existing bridges, without obstruction. As shown on **Table 2-12**, the existing left channel bridge low chord elevation is 1726.2 feet msl, with top of deck elevation 1729.5 feet msl at abutment 1, and elevation 1728.8 feet msl at abutment 2. The existing right channel bridge low chord elevation is 1726.7 feet msl, with top of deck elevation 1730.4 feet msl at abutment 1, and 1729.7 feet msl at abutment 2. The hydraulic analysis also indicates that the maximum unobstructed flow is 11,500 ft^3/sec, with a water surface elevation of 1725.4 feet msl. This indicates that for any flows greater than 11,500 ft^3/sec, the flow will be backed up behind the bridge superstructure.

The hydraulic analysis also included an estimate of the January 1, 1997 flood flow (estimated to be 15,000 cfs) upstream of Rush and Grass Valley Creeks. Computed water surface elevations for the 5,000 ft^3/sec flow and the January 1, 1997 flood corresponded well with measured data and eyewitness accounts. The model shows the island upstream and downstream of the bridges, the road between the bridges, and part of the left bridge deck being overtopped during the 1997 flood. The hydraulic analysis shows that the water surface elevation for this flow is 1729.1 feet, indicating the road between the bridges and the west end of the left bridge were overtopped during simulation of the January 1, 1997 flood event.

Scour Analysis

At Poker Bar, drill holes revealed loosely bonded coarse alluvial material overlying a more compacted and hard conglomerate layer. The weakly cemented but erosion resistant conglomerate layer consists of coarse material (boulders, cobbles, and gravel) with finer sands and clays filling the interstitial spaces. This material is difficult to penetrate and would undoubtedly decrease if not halt erosion once the overlying alluvium was removed. This conglomerate layer was discovered at all four Poker Bar drill holes sites and appears to be continuous across the entire cross section of the bridges.

Conglomerate was apparent from the ground surface to the bottom of the drill hole near the left abutment of the left bridge (looking downstream). The estimated elevation of the conglomerate at the left abutment toe is 1712 feet msl. The right abutment of the left bridge has about 22 feet of fill and loose alluvium above the harder conglomerate layer at elevation 1707 feet msl. In the channel, the geologic information indicates 1 to 2 feet of alluvium overlying conglomerate (Sherer 2001) resulting in an erosion resistant layer at about 1707.5 feet msl.

The right bridge has approximately 27 feet of fill material and loose alluvium above the conglomerate layer at the left abutment and about 22 feet at the right abutment (Sherer 2001). The estimated elevations of the conglomerate layer at the right bridge are 1701 feet msl and 1707 feet msl at the left and right abutments respectively. Alluvial material is an average of 10 feet deep above conglomerate in the channel bed under the right bridge resulting in a conglomerate layer elevation of approximately 1704 feet msl below the right channel thalweg.

Scour at both bridges was analyzed for a total discharge of 23,400 cfs to determine where the maximum scour depth might occur. For a 23,400 cfs total discharge, 10,039 ft^3/s travels down the left channel while the remaining 13,361 cfs splits into the right channel. Hydraulic analysis determined that even though more flow goes down the right channel, the vertical concrete abutments severely contract the flow in the left channel, increasing flow velocity and creating large potential scour depths at the abutment toes.

At the left bridge, potential total scour depths of 29.7 feet, 1.7 feet, and 31.2 feet were computed at the left abutment, thalweg, and right abutments corresponding to bottom of scour hole elevations of 1682 feet, 1707 feet, and 1680 feet msl respectively. These estimated scour elevations are well below the approximate conglomerate layer elevations at the existing left bridge. Scour depths would be controlled by the erosion resistant conglomerate layer beneath the left bridge.

At the existing right bridge, estimated scour depths of 7.3 feet and 13.7 feet were computed at the left and right abutments respectively. Contraction scour was estimated to be zero in the main channel under the right bridge. Bottom of scour hole elevations are 1720 feet msl at the left abutment and 1713 feet msl at the right abutment. The bottoms of these scour holes are above the existing conglomerate layer, indicating that scour depth would likely cease before reaching the erosion resistant material.

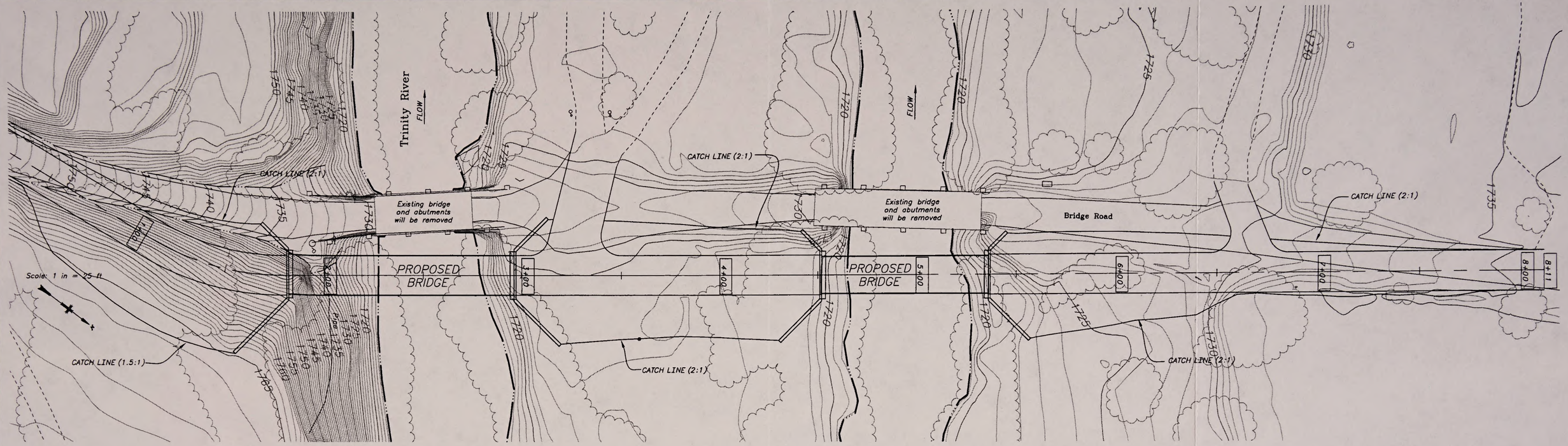
Due to the large depth of erodible sediment above the conglomerate layer, the bridge abutments and the bed under the right bridge have the highest potential for scour during a flood event. The bed below the left bridge has shallow alluvium overlying hard conglomerate that would impede erosion. The island between the bridges consists of alluvial deposits, but the established vegetation would provide significant resistance to erosion during high flow events.

Proposed Action (Replacement Upstream with Two Single Span Structures)

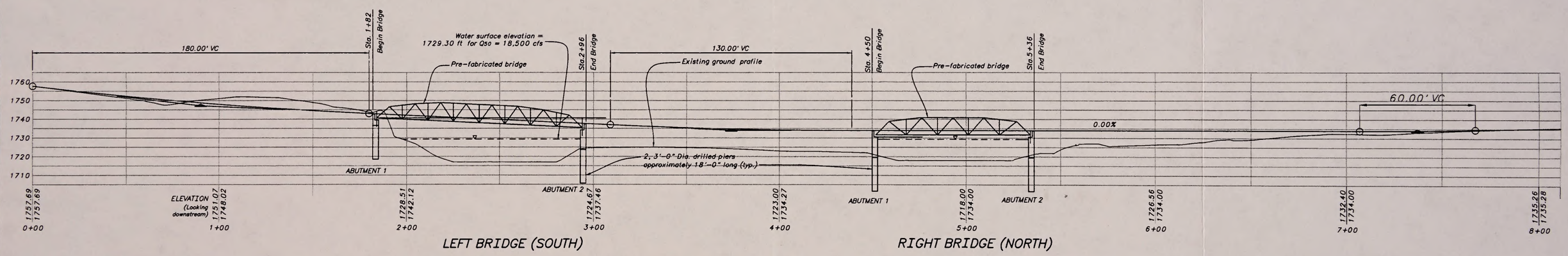
The Proposed Action would construct two bridges approximately 35 feet upstream of the existing bridges at Poker Bar (**Figure 2-14**). The bridges will remain on private property, and will be the property of the Poker Bar Homeowners Association - East. The proposed bridge types are single span prefabricated steel trusses with reinforced concrete deck, with an 18-foot clear roadway width, designed to carry HS20 live loading. The proposed bridges are 110 feet long over the left channel, and 80 feet long over the right channel. The prefabricated steel truss heights are 9 feet and 7.5 feet respectively. The bridge superstructure and guardrail will be fabricated with weathering steel.

The portion of road between the two bridges and the approaches will have an 18-foot clear roadway width, and it will be paved with asphalt concrete.

The longer spans will provide for a wider flow area under the bridges that will reduce the backwater elevation, and water velocities. The proposed bridge abutments are located outside of the low-flow active channel (Q = 450 cfs). This will allow the contractor the ability to access and install supports without encroaching upon the low-flow active channel.



Poker Bar Bridges Proposed Site Layout



Poker Bar Bridges Proposed Profile

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT – CALIFORNIA
TRINITY RIVER DIVISION
TRINITY RIVER MAINSTEM FISHERY RESTORATION

TRINITY RIVER BRIDGES

POKER BAR ROAD BRIDGES
PROPOSED ACTION – TRUSS BRIDGES
PLAN AND PROFILE

DESIGNED Jesus G. Romero CHECKED CHECKED
DRAWN Jesus G. Romero TECH. APPR. TECH. APPROVAL
APPROVED APPROVED
TECH REVIEWER (TITLE)
DENVER, COLORADO

F:Projects/10006 - Trinity River Bridge Replacement/GIS/Working_CAD_Files/Poker-Brdg-ups.dwg Source: U.S. Bureau of Reclamation 03-03-03 tkoehler

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Trinity River Bridges Project

Figure 2-14
Poker Bar Bridges Proposed Action Site Layout & Profile

Under the Proposed Action, the Poker Bar bridge abutments will be founded on drilled shafts. Drilled shafts construction will be done using standard equipment and procedures (contractor's choice) based on type of equipment available. The equipment may be a track dozer and a drill rig. Abutment wing walls will be reinforced concrete or reinforced earth with brick facade.

All material and water required for drilling and installing the drilled shafts will be contained and disposed of off-site by the contractor at an approved and appropriate disposal site. The specifications will instruct the contractor that no cement fines, drilling fluids or contaminated water will be allowed to enter the ground or stream. The containment and disposal system has not been determined, since equipment to do this type of work varies from contractor to contractor. Slope protection will be placed adjacent to each abutment. The left approach roadway will be raised approximately 13 feet and will have 2:1 side slopes. Slope protection will be provided on both sides of the right approach roadway.

The road between the two bridges will be raised to elevation 1740.0 feet msl at the left bridge abutment 2 and transition to elevation 1734.0 feet msl at the right bridge abutment 1. Slope protection will be provided on both sides of the road between the two bridges.

Design Criteria

The following documents were referenced to develop the bridge design:

- AASHTO *A Policy on Geometric Design of Highways and Streets* (Fourth Edition, 2001)
- AASHTO *Standard Specification for Highway Bridges* (16th Edition, 1996, with Interims and Revisions by Caltrans)
- Caltrans and FHWA bridge planning and design manuals
- Trinity County Transportation Department Design Guidelines, policies and requirements
- Trinity County's Fire Safe Ordinance
- *Estimation of 50-and 100-Year Tributary Accretion Floods; Lewiston Dam to Treadwell Bridge, Trinity River, California*, McBain and Trush, April 30, 2002
- *Trinity River Restoration Program – Trinity River Bridge Hydrologic Analysis, Draft Report,* BOR Technical Service Center, April 2003

Trinity River Restoration Program, Trinity River Bridges: Hydraulic, Scour, and Riprap Sizing Analysis, *BOR Technical Service Center, April 9, 2003*

Hydraulics

The longer spans will provide for a wider flow area under the bridges that will reduce the backwater elevation and water velocities. This is a more natural condition than currently occurs in the constricted left channel.

A hydraulic model was developed and calibrated to match measured water surface elevations upstream of the existing bridges using HEC-RAS. The hydraulic analysis indicates that the existing bridges should be replaced with new bridges up- or downstream of the existing bridges. To obtain appropriate water surface elevations for the flows provided in **Table 2-14** for bridges up- or downstream, the HEC-RAS analysis was redone. The calculated water surface elevations are shown in the following table.

Using water surface elevation 1729.3 feet msl for Q_{50} = 18,500 cfs, 2 feet of freeboard, and a 2.5-foot superstructure depth results in a road approach and top of deck elevation of 1733.8 feet msl. The top of deck elevation will be set at elevation 1734.0 feet msl, resulting in an approximate low chord elevation of 1731.5 feet msl. The bridge will also pass the Q_{100} = 23,400 cfs (Annual with ROD), and the Q_{MCR} = 16,900 cfs.

Scour Analysis

Geometry for two new steel bridges at Poker Bar, 30-feet upstream of the existing bridges was used for proposed

TABLE 2-14

FLOW DISCHARGES AT POKER BAR BRIDGES @ RM = 102.38

NEW BRIDGES, UPSTREAM OF EXISTING BRIDGES

TRINITY DAM DISCHARGES PLUS TRIBUTARY FLOWS

Flow description	LC = 1732.0 TOD = 1734.5 (cfs)	Water Surface Elevations (ft)
Return Period Peak Flow (Annual with ROD)[a]	Q_{50} = 18,500 Q_{100} = 23,400	El. = 1729.3 El.= 1731.0
Maximum Controlled - Flow Release [b]	Q_{MCR} = 16,900	El. = 1728.7
Estimated flow during 1/1/97 [c]	Q_{1997} = 15,000	El. = 1727.9

Notes:

[a] Return Period Peak Flow – Annual with ROD – Combined winter and spring considering all 5 ROD water year type. Includes a possible 11,000 cfs release from Lewiston Dam in the spring.

[b] Maximum Controlled-Flow Release – 13,750 cfs is the maximum controlled release from Trinity Dam. Combining this flow with 100-year May/June peak tributary flow gives the flow value shown.

[c] Scott McBain of McBain and Trush provided flow estimates for the January 1, 1997 flood event.

[d] Lewiston Dam releases to the Trinity River based on the ROD. 450 cfs is the proposed flow release at Lewiston Dam between July 22 and October 15 of each year. 300 cfs is the proposed flow release at Lewiston Dam between October 16 and April 15 of each year.

LC = Bridge low chord, or bottom of beam elevation at lowest point under the bridge.

TOD = Top of Deck elevation. When top of deck elevation varies across the length of the bridge, the value shown in the table is the lowest top of deck elevation.

RM = Trinity River mile.

msl = Elevation above mean sea level (feet).

Q = Flow rate (cfs)

- action scour computations. For a 100-year flow of 23,400 cfs, hydraulic computations showed 12,961 ft^3/s traveling down the left channel and the remaining 10,439 cfs passing down the right channel. Because of the uneven flow split and higher resulting depths and velocities, the left channel was determined to be the most critical for scour computations. The substrate d_{50} was computed from bed material samples collected at the site

Contraction and abutment scour were computed at the proposed left Poker Bar Bridge for 12,961 cfs. The computed depths of scour were 9.3 feet, 1.0 feet, and 16.6 feet resulting in bottom of scour hole elevations of 1720 feet, 1710 feet, and 1708 feet msl at the left abutment, thalweg of main channel, and right abutments respectively. These numbers show that the largest scour depth and lowest scour hole bottom elevation occurs at the right abutment.

The 2001 BOR geologic report reveals that at the existing left Poker Bar Bridge, a continuous, erosion resistant, hard conglomerate layer exists underneath construction fill and alluvium. At the left abutment, channel thalweg, and right abutment, the approximate elevations of this hard conglomerate layer are 1712 feet, 1707.5 feet, and 1707 feet msl respectively. According to the comparison of these elevations to the estimated bottom of scour hole elevations, the hard conglomerate layer is too deep to control the depth of scour. During the Q_{100} event, scour would likely cease before reaching the erosion resistant layer.

Alignment and Design Speed

The Poker Bar Road and Bridges will be designed for a speed of 25 mph. The proposed roadway alignment from the left approach is set with a 130-foot radius horizontal curve. From this point, the alignment is tangent and straight across the flood plain and ties into the existing alignment approximately 275 feet from the end of the existing right channel bridge (Station 8+10). The proposed alignment length is approximately 810 feet.

Roadway Approaches

The proposed bridges will have an 18-foot clear roadway width and provide two 9-foot lanes. The total structure width including the truss members is 22 feet. The roadway profile for the Poker Bar Bridges is based on the Caltrans and FHWA hydraulic freeboard guidelines. The application of these guidelines results in 2 feet of freeboard over the 50-year event and the ability to pass the 100-year event. The minimum soffit elevation based on the hydraulics analysis is 1731.5 feet msl. The single span bridges have a superstructure depth of 2.5 feet, and the truss height for the 110-foot span is 9.5 feet.

The proposed alignment from the left approach descends towards the proposed bridges at a grade of 11.5 percent, 2 percent flatter than the existing approach. The grade change is made possible by a 180-foot long vertical curve. The left channel bridge begins at Station 1+82 and the right channel bridge begins at Station 4+52. The proposed left channel bridge is on a descending 4.67 percent grade. A 130-foot vertical curve begins at the end of the left channel bridge and ends at the beginning of the right channel bridge. The right channel bridge top of deck elevation will be at a constant 1734.0 feet msl. After the end of the right channel bridge, a 60-foot vertical curve is used to tie the new roadway profile to the existing grade. To maintain existing access to Poker Bar (island), a ramp roughly perpendicular to the proposed alignment will extend approximately 170-feet downstream from the edge of the proposed roadway alignment. The existing posts and cable "gates" will be replaced to limit access to the privately-owned bar. The existing driveway that provides access to Assessor's Parcel Number (APN)-25-670-18 will be reconstructed, and raised with a 7 percent grade. The proposed bridge and roadway require approximately 4,000 cubic yards of imported embankment material.

Table 2-15 shows top of approach, top of deck, and top of structure elevations for the Proposed Action. Typically, approach road elevations are the same as the top of bridge deck elevations. These elevations are shown on **Figure 2-14**.

TABLE 2-15

APPROACH, TOP OF DECK, AND TOP OF STRUCTURE ELEVATIONS – POKER BAR BRIDGE

Structure	Left Approach/top of deck elevation (ft)	Low chord elevation (ft)	Right approach/top of deck elevation (ft)	Top of Structure elevation (ft)[a]
Proposed Left Channel Bridge	1743.0	1735.1	1737.6	1753.0
Proposed Right Channel Bridge	1734.0	1731.5	1734.0	1740.0

Notes: [a] Elevation shown is top of truss for the Proposed Action.

Bridge Replacement

For the Proposed Action, the replacement bridges will have an 18-foot clear roadway width and provide two 9-foot lanes. The total structure width including the truss members is approximately 22 feet.

Slope Protection

Slope protection will be provided at abutment 2 of the left channel bridge and at both abutments for the right channel bridge (**Figure 2-14**). The limits and size of the slope protection will be shown on the final drawings. The rip-rap will be "light" class for 2:1 slopes and/or "1/4-ton" class for 1.5:1 slopes (**Table 2-5**).

Drainage

For the Proposed Action, the bridge and roadway profiles will have a crowned cross section, which will provide sufficient gradient for drainage of any surface water. The left approach roadway, the roadway between the bridges and the right approach roadway will be paved. Drainage of the bridge deck will be designed to prevent direct discharge of stormwater from the deck to the live stream.

Right-of-Way

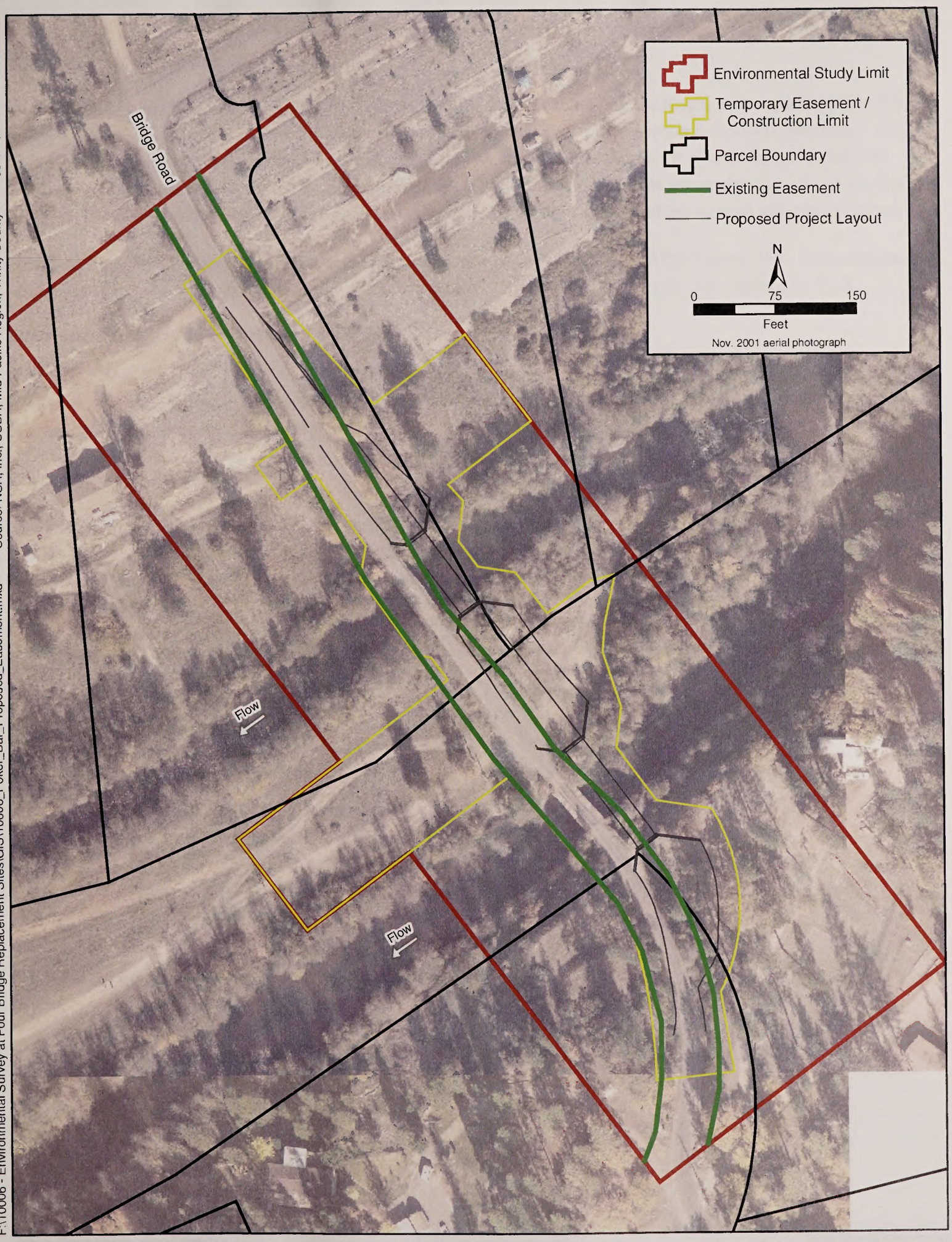
The existing bridges and the proposed bridges are located on private property. Additional permanent easement area both upstream and downstream will be required to accommodate the proposed bridge, roadway alignment and approach fills.

Temporary construction easements on both sides of the proposed bridge will be necessary for construction activities. Permanent easements will be required at all abutment and roadway locations. The recommended easements, existing easement limits, and existing property lines are all shown on **Figure 2-15**. Stripping and removal of vegetation will be kept to a minimum, as required in the specifications.

Utilities

No overhead utilities were observed and there do not appear to be any underground utilities in the vicinity of the bridges.

The County does not expect this project to impact the facilities or long-term access of various districts or utilities. Future utility access (conduits) can be attached to the steel truss members.



F:\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Poker_Bar_Proposed_Easement.mxd Source: NSR, Inc.; USBR, Mid-Pacific Region; Trinity County 03-11-03 tkoehler

North State Resources, Inc.

Trinity River Bridges Project

Figure 2-15
Poker Bar Bridges Proposed Action Construction Limit & Easements

Bridge Railing and Signing

Approach guard railing will be placed at the both ends of the bridges and along the length of the road between the two bridges. Access to the bar will be provided with a ramp beyond the ends of the approach roadway guardrail. The bridge guardrail will consist of weathering beam supported by steel beams. Approach guardrails will consist of weathering steel beam rail supported by timber posts. Signs will be posted near the left approach to designate that the bridge and road are private. Speed limit signs and other applicable signs will be added on each approach roadway.

Bridge railings must conform to the full-scale crash-test criteria established in NCHRP Report 350. This criterion has established TL-2 for roadways with design vehicle speeds of 25 mph. The bridge rail will conform to TL-2.

Construction Criteria and Methods

Specifications

Construction specifications will be developed by the BOR, and will meet Caltrans Standard Specifications, and the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects.

Construction Process Overview

The following is a list of potential construction activities that may be required for the Proposed Action at the Poker Bar Bridge site. This list is not intended to be a precise or comprehensive construction schedule, and is not intended to show an exact sequence of construction activities. Some of these construction processes may temporarily affect property owner access.

- Construct staging area (level area to allow for equipment set up and installing drilled shafts) at abutments
- Construct drilled shafts
- Construct formwork for abutments
- Place reinforcement and concrete
- Assemble and erect prefabricated bridges
- Construct roadway approaches
- Tie new roadway approaches onto existing roads
- Open new bridges and road to traffic
- Remove existing railroad flatcar bridge superstructures
- Install slope protection as required
- Remove existing abutements

The existing bridges will remain open to traffic and will provide access for homeowners and construction equipment and personnel during construction. Keeping the existing bridge open will minimize impacts to the homeowners. Traffic control will be the provided by the contractor and it is the contractor's responsibility to provide access for the homeowners. Temporary closures of Poker Bar Road, Bridge Road, and the existing bridges may be necessary at times during construction, particularly near the completion of the work (i.e., when tying the new road alignment onto the existing road alignment).

In-River Construction

The proposed bridge abutments will be located outside of the active low-flow channel (Q = 450 cfs). This will allow the contractor the ability to access and install supports without encroaching upon the live river channel.

Construction activities are not anticipated within the active low-flow channel. However, if instream construction measures are unavoidable and require implementation outside of the June 15th to September 15th dry-season construction window, all potential salmonid spawning habitat will be isolated from use prior to September 1st. A qualified fisheries biologist will use a conservative definition of suitable spawning area and will ensure that these areas are protected from use by appropriate exclusionary materials (e.g., anti-spawning mats or fencing). This effort will avoid any impacts to early fish life stages that are immobile and very sensitive to the crushing effects of heavy equipment operation on the stream bottom. These materials will be sufficiently anchored to the stream bottom during the instream work period to preclude spawning anadromous fish from digging redds in the work area. They will be removed after completion of instream work and prior to flood season. They will be anchored sufficiently to ensure that an unplanned high flow release from the dam will not cause them to release from their anchorage and create a litter problem.

A seep well may be constructed outside the active low-flow channel to provide construction "make-up" water for all construction activities. A backhoe may be used to excavate and backfill soils at the seep well site. The well may consist of large diameter, perforated pipe placed vertically in the soil to a depth below the groundwater level. The annular space around the pipe will be filled with large aggregate to promote groundwater flow to the well. All material and water required for drilling and installing the drilled shafts will be contained and disposed of off-site by the contractor at an approved and appropriate disposal site. The specifications will instruct the contractor that no cement fines, drilling fluids or contaminated water will be allowed to enter the ground or stream. The containment and disposal system has not been determined, since equipment to do this type of work varies by contractor to contractor.

Dewatering Activities

Should dewatering be required for construction at the site, the dewatering discharge will be contained in a tank or onsite containment/infiltration basin. In the event that an infiltration basin is used, discharge to the basin will be limited to water/groundwater only and will not be contaminated with deleterious construction byproducts.

Traffic Control / Detour

Temporary closures of Poker Bar Road, Bridge Road, and the bridges may be needed at certain times during construction and near the completion of the work, when tying the new road alignment onto the existing road alignment.

Bridge Demolition

Removal of the existing bridge structures will occur after the new bridges and road are open to traffic. Demolition of the flatcars and pilings may require use of a crane, cutting torches and/or other demolition equipment. The railroad flat cars can be dismantled and salvaged. The existing concrete abutments will be demolished and broken up into pieces that can be easily handled with typical construction equipment, such as a crane and haul trucks. No construction debris resulting from demolition will be allowed to enter the stream. The contractor will be required to dispose of material offsite at an acceptable disposal site determined by the type of material encountered. Any demolition activities that may create lead paint chips will require a lead containment system

Demolition of the flatcars and pilings may require use of a crane, cutting torches and/or other demolition equipment. The selected method of disposition of the existing bridge components (demolition or re-use elsewhere) will determine the amount and type of wastes produced. The following procedures will apply to the contractor's selected demolition and/or removal activities:

- Asphalt and tar waste from the bridge should be recycled.
- Because of the presence of lead paint on the existing bridge structure, none of the painted metal portions of the existing bridges will be sawed, burned, or sanded. If cutting torches are used on painted metal surfaces, contractor will comply with appropriate regulations for safety, disposal and collection of byproducts. If the contractor chooses disposal, the existing bridgework shall be disposed of in a properly licensed landfill. Demolition workers should be protected according to the provisions of 8 CCR 1532, "Lead in Construction." Prior to demolition or re-use of the bridge, a licensed lead-based paint removal contractor should remove any loose, lead-based paint that is chipping or peeling from the bridges. The lead waste (paint chips, dust, etc.) should be disposed of appropriately.
- There will likely be some amount of treated wood waste produced. If disposal of treated wood waste is required, it will be disposed of at an appropriate landfill site.

Contractor Staging and Storage Areas

The existing bridges will remain open and provide primary site access. Contractor staging areas are expected to be available within the temporary easement areas. Staging areas will be necessary for installing drilled shafts at the new bridge abutments. This staging area will consist of a level area to allow for equipment set up and installing drilled shafts and be located upstream and downstream of the island roadway alignment and upstream of the right channel right abutment. The temporary construction easement areas are shown in **Figure 2-15**. The contractor will be required to place lath, flagging or other suitable markers at the edge of the temporary construction easements to show workmen the limits within which they must stay.

Air Pollution and Dust Control

Efforts will be made to minimize air pollution. The BOR specifications require that the contractor comply with all applicable air pollution control rules, regulations, ordinances, and statutes. Contract documents will specify that the contractor will be responsible to limit dust by watering construction site areas used by trucks and vehicles.

Fill Import and Export

Embankment material is typically a well-graded mixture of clayey sand (SC), sandy lean clay (CL), lean clay (CL), silt (ML), or silty sand (SM). Embankment material gradation typically has a minimum of 20 percent by dry weight, of soil particles passing a No. 200 United States Standard sieve, with a maximum particle size of 4 inches in maximum dimension. The material shall be obtained from on-site excavation or other approved sources and will be free from chemical contamination, vegetation, roots, trash, debris, or other unsatisfactory material. All lumps, clods, and oversize particles shall be removed.

When riprap for slope protection is required, the rock used for rip-rap shall be hard, dense, and durable. Either quarried rock or boulders may be used for rip-rap. Since no rip-rap is available onsite, all material used for slope protection will be imported. The rock in rip-rap shall be reasonably well graded from the maximum size down to the minimum size as previously shown in **Table 2-5**.

An estimated 4000 cubic yards of embankment material will be required for embankment and structural backfill. This material will be hauled from an approved borrow source. An estimated 1700 cubic yards of rip-rap will be required for slope protection and abutment protection.

Slope protection will be placed adjacent to each abutment. The left approach roadway will be raised approximately 13 feet and will have 2:1 side slopes. Slope protection will also be provided on both sides of the right approach roadway to protect the roadway embankment from flows that may overtop and erode the road. The road between the two bridges will be raised approximately 7 feet to an elevation of 1737.6 feet msl at the left bridge abutment 2 and transition to an elevation of 1734.0 feet msl at the right bridge abutment 1. Slope protection will also be provided on both sides of the road between the two bridges to protect the roadway embankment from flow that may overtop and wash away the road embankment (**Figure 2-14**).

Water Pollution Prevention

The contractor shall also implement water pollution control measures that conform to applicable and appropriate permits. The contractor will be required to use extreme care to prevent dirt, debris and miscellaneous demolition byproducts from entering the stream. Some of the key water pollution control measures that shall be implemented are listed below:

- The contractor shall exercise every reasonable precaution to protect the Trinity River from pollution with fuels, oils, bitumen, calcium chloride, and other harmful materials and shall conduct and schedule operations to avoid or minimize muddying and silting of the river. Care shall be exercised to preserve roadside vegetation beyond the limits of construction.
- Water pollution control work is intended to provide prevention, control and abatement of water pollution to the Trinity River, and shall consist of constructing those facilities that may be shown on the plans, specified herein or in the special provisions, or directed by the Engineer.
- The contractor shall provide temporary water pollution control measures, including but not limited to, dikes, basins, ditches, and applying straw and seed, which become necessary because of the contractor's operations. The contractor shall coordinate water pollution control work with all other work done on the contract.
- Before starting any work on the project, the contractor shall develop an agency-approved program to control water pollution effectively during construction of the project. The program shall show the schedule for the erosion control work included in the contract and for all water pollution control measures that the contractor

proposes to take in connection with construction of the project to minimize the effects of the operations upon adjacent streams and other bodies of water. The contractor shall not perform any clearing and grubbing or earthwork on the project until the program has been accepted.

- Where erosion that will cause water pollution is probable due to the nature of the material or the season of the year, the contractor's operations shall be so scheduled that permanent erosion control features will be installed concurrently with or immediately following grading operations.
- Nothing in the terms of the contract shall relieve the contractor of the responsibility for compliance with Sections 5650, 1601 and 12015 of the Fish and Game Code, or other applicable statutes relating to prevention or abatement of water pollution.
- Where working areas encroach on live streams, barriers adequate to prevent the flow of muddy water into streams shall be constructed and maintained between working areas and streams. During construction of the barriers, muddying of streams shall be held to a minimum.
- Water containing mud or silt from aggregate washing or other operations shall be treated by filtration, or retention in a settling pond, or ponds, adequate to prevent muddy water from entering live streams.
- Oily or greasy substances originating from the contractor's operations shall not be allowed to enter or be placed where they will later enter a live stream.
- Portland cement or fresh Portland cement concrete shall not be allowed to enter flowing water of streams.
- Material derived from roadway work shall not be deposited in a live stream channel where it could be washed away by high stream flows.
- Where there is possible migration of anadromous fish in streams affected by construction on the project, the contractor shall conduct work operations that allow free passage of migratory fish.

Utility Relocation

No utilities will be impacted under this proposal. No relocation will be necessary.

Tentative Schedule

Construction associated with the Trinity River Bridges Project cannot begin until the environmental document has been adopted by the BOR, the BLM, and the County; preparation of final design, plans, specifications, and cost estimates; acquisition of ROW; acquisition of permits; and design approvals from state and federal agencies.

Construction of the bridge abutments, superstructures and decking is anticipated to occur in the summer/fall season of 2004. Construction of new roadway alignment may extend into the winter/spring of 2005. Demolition of existing structures will occur the following summer. Total construction time is anticipated to be approximately 195 days. An additional 60 days (approximately 30 days of in-water, and 30 days of adjacent bank work) will be required to remove abutments. It is anticipated that removal of the old bridge, clean up, fine grading, and revegetation of the site would be accomplished after the new bridge is open to traffic in the second season of work (June 15 to September 15, 2005).

Alternative 1 Replacement Downstream with Two Single Span Structures

Under Alternative 1, the Poker Bar bridges will be constructed approximately 35 feet downstream of the existing bridges (**Figure 2-16**). The bridges will remain on private property, and will be the property of the Poker Bar

Homeowners Association - East. The proposed bridge types are single span prefabricated steel trusses with reinforced concrete deck, with an 18-foot clear roadway width, designed to carry HS20 live loading. The proposed bridges are 110 feet long over the left channel, and 80-feet-long over the right channel. The prefabricated steel truss heights are 9 feet and 7.5 feet respectively. The bridge superstructure and guardrail will be fabricated with weathering steel. The portion of road between the two bridges and the approaches will have an 18-foot clear roadway width, and it will be paved with asphalt concrete.

The longer spans will provide for a wider flow area under the bridges that will reduce the backwater elevation, and water velocities. The proposed bridge abutments are located outside of the low-flow active channel (Q = 450 cfs). This will allow the contractor the ability to access and install supports without encroaching upon the low-flow active channel.

Under Alternative 1, the Poker Bar bridge abutments will be founded on drilled shafts. Drilled shafts construction will be done using standard equipment and procedures (contractor's choice) based on type of equipment available. The equipment may be a track dozer and a drill rig. Abutment wing walls will be reinforced concrete or reinforced earth with brick facade.

All material and water required for drilling and installing the drilled shafts will be contained and disposed of off-site by the contractor at an approved and appropriate disposal site. The specifications will instruct the contractor that no cement fines, drilling fluids or contaminated water will be allowed to enter the ground or stream. The containment and disposal system has not been determined, since equipment to do this type of work varies from contractor to contractor.

Slope protection will be placed adjacent to each abutment. The left approach roadway will be raised approximately 18 feet and will have 2:1 side slopes. Slope protection will be provided on both sides of the right approach roadway.

The road between the two bridges will be raised to elevation 1740 feet msl at the left bridge abutment 2 and transition to elevation 1734 feet msl at the right bridge abutment 1. Slope protection will be provided on both sides of the road between the two bridges.

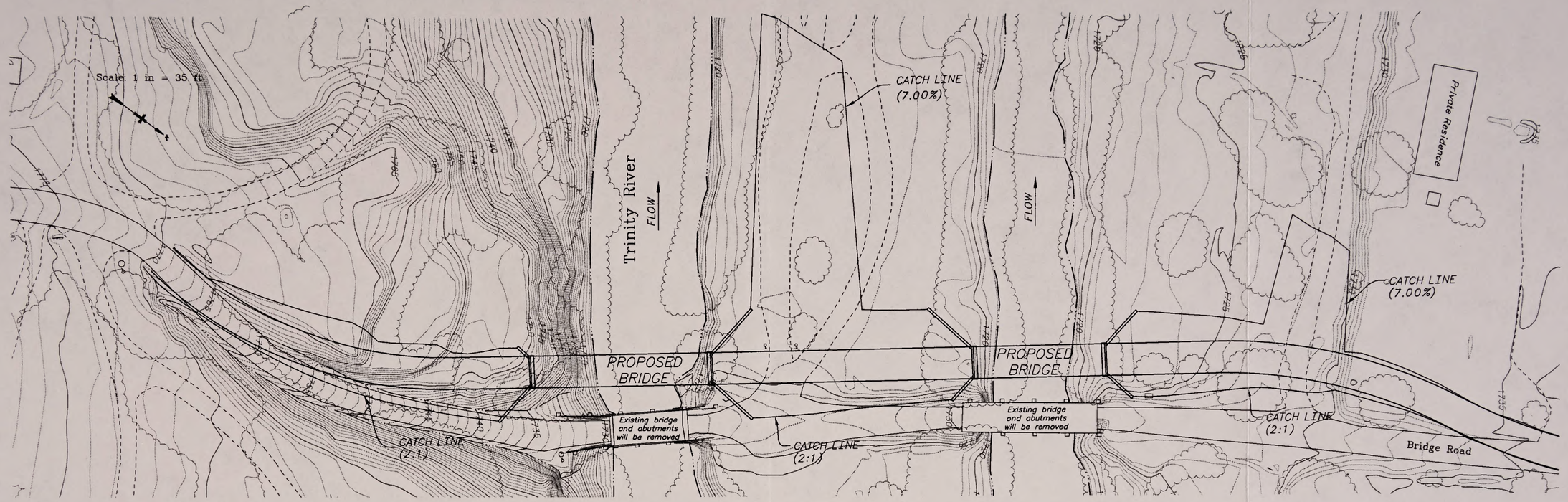
Design Criteria

The same documents referenced in the development of bridge design criteria under the Proposed Action, were also used in the development of the Alternative 1 bridge structure.

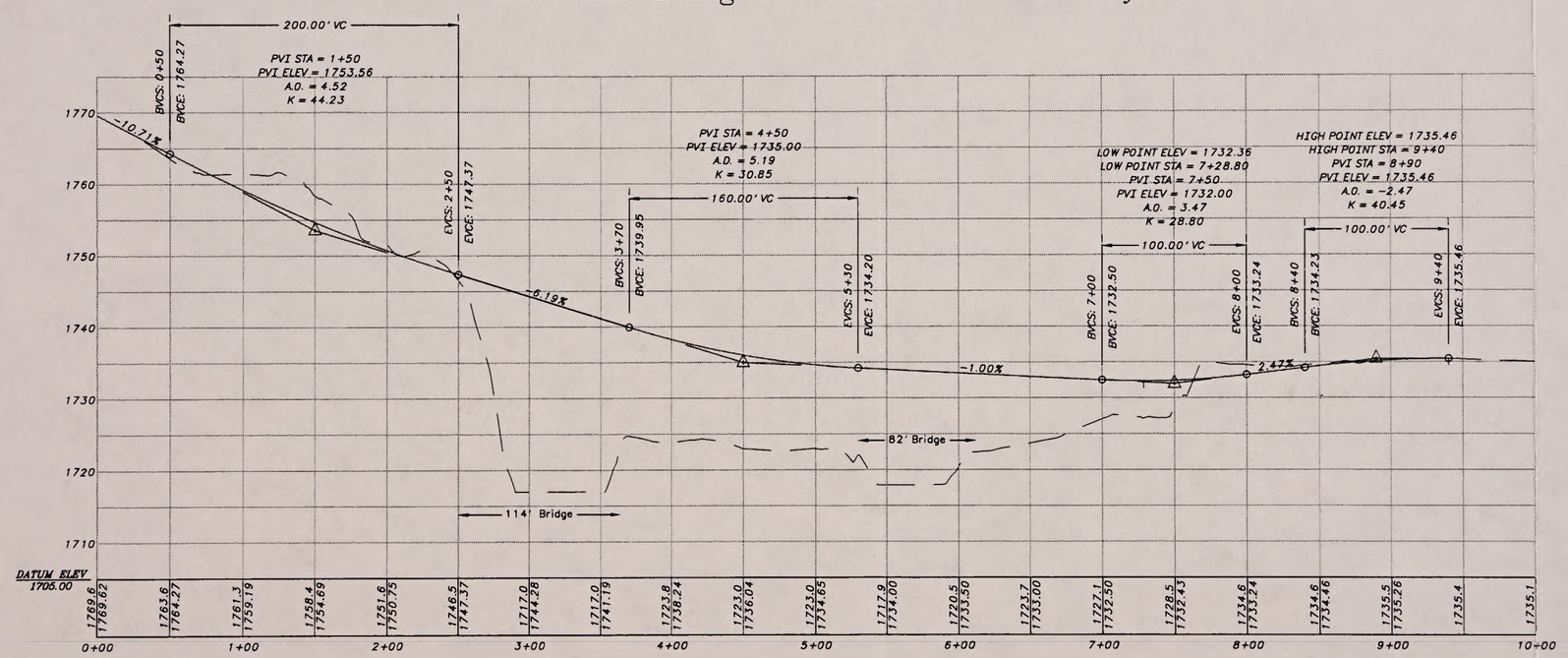
Hydraulics

The longer spans will provide for a wider flow area under the bridges that will reduce the backwater elevation and water velocities. This is a more natural condition than currently occurs in the constricted left channel.

A HEC-RAS hydraulic model was developed and calibrated to obtain appropriate water surface elevations for the flows provided in **Table 2-16** for bridges downstream. The calculated water surface elevations are shown in the following table.



Poker Bar Bridges Alternative 1 Site Layout



Poker Bar Bridges Alternative 1 Profile

(new bridge at El. 1732.00 ft)

CENTRAL VALLEY PROJECT – CALIFORNIA
TRINITY RIVER DIVISION
TRINITY RIVER MAINSTEM FISHERY RESTORATION

TRINITY RIVER BRIDGES

POKER BAR ROAD BRIDGES
ALTERNATIVE 1 – DOWNSTREAM TRUSS BRIDGES
PLAN AND PROFILE

F:\Projects\10006 - Trinity River Bridge Replacement\GIS\Working_CAD_Files\Poker_Bar-dnstrm.dwg Source: U.S. Bureau of Reclamation 03-25-03 tkoehler

North State Resources, Inc.

Trinity River Bridges Project

Figure 2-16
Poker Bar Bridges Alternative 1
Site Layout & Profile

TABLE 2-16

FLOW DISCHARGES AT POKER BAR BRIDGES @ RM = 102.38

ALTERNATIVE 1 - NEW BRIDGES, DOWNSTREAM OF EXISTING BRIDGES

TRINITY DAM DISCHARGES PLUS TRIBUTARY FLOWS

Flow description	LC = 1732.0 TOD = 1734.5 (cfs)	Water Surface Elevations (ft)
Return Period Peak Flow (Annual with ROD)[a]	Q_{50} = 18,500 Q_{100} = 23,400	El. = 1729.3 El.= 1731.0
Maximum Controlled - Flow Release [b]	Q_{MCR} = 16,900	El. = 1728.7
Estimated flow during 1/1/97 [c]	Q_{1997} = 15,000	El. = 1727.9

Notes:

[a] Return Period Peak Flow – Annual with ROD – Combined winter and spring considering all 5 ROD water year type. Includes a possible 11,000 cfs release from Lewiston Dam in the spring.

[b] Maximum Controlled-Flow Release – 13,750 cfs is the maximum controlled release from Trinity Dam. Combining this flow with 100-year May/June peak tributary flow gives the flow value shown.

[c] Scott McBain of McBain and Trush provided flow estimates for the January 1, 1997 flood event.

[d] Lewiston Dam releases to the Trinity River based on the ROD. 450 cfs is the proposed flow release at Lewiston Dam between July 22 and October 15 of each year. 300 cfs is the proposed flow release at Lewiston Dam between October 16 and April 15 of each year.

LC = Bridge low chord, or bottom of beam elevation at lowest point under the bridge.

TOD = Top of Deck elevation. When top of deck elevation varies across the length of the bridge, the value shown in the table is the lowest top of deck elevation.

RM = Trinity River mile.

msl = Elevation above mean sea level (feet).

Q = Flow rate (cfs)

Using water surface elevation 1729.8 feet msl for Q_{50} = 18,500 cfs, 2-feet of freeboard, and a 2.5-feet superstructure depth results in a road approach and TOD of 1733.8 feet msl. The TOD elevation will be set at elevation

1734.0 feet msl, resulting in an approximate low chord elevation of 1731.5 feet msl. The bridge will also pass the Q_{100} = 23,400 cfs (Annual with ROD), and the Q_{MCR} = 16,900 cfs.

Scour Analysis

Due to the similar bridge geometry and close proximity of the Proposed Action and Alternative 1 options, the computed hydraulics and scour estimates for a total discharge of 24,300 ft^3/s at the proposed action bridge apply to both alternatives.

Alignment and Design Speed

The Poker Bar Road and Bridges will be designed for a speed of 25 mph. The proposed roadway alignment from the left approach is set with a 130-foot radius horizontal curve. From this point, the alignment is tangent and straight across the flood plain and ties into the existing alignment approximately 275 feet from the end of the existing right channel bridge (Station 8+10). The proposed alignment length is approximately 940 feet.

Roadway Approaches

The proposed bridges will have an 18-foot clear roadway width and provide two 9-foot lanes. The total structure width including the truss members is 22 feet. The roadway profile for the Poker Bar Bridges is based on the Caltrans and FHWA hydraulic freeboard guidelines. The application of these guidelines results in 2 feet of freeboard over the 50-year event and the ability to pass the 100-year event. The minimum soffit elevation based on the hydraulics analysis is 1731.5 feet msl. The single span bridges have a superstructure depth of 2.5 feet, and the truss height for the 110-foot span is 9.5 feet.

The proposed alignment from the left approach descends towards the proposed bridges at a grade of 10.7 percent, 2 percent flatter than the existing approach. The grade change is made possible by a 200-foot long vertical curve. The left channel bridge begins at Station 2+50 and the right channel bridge begins at Station 5+30. The proposed left channel bridge is on a descending 6.19 percent grade. A 60-foot vertical curve begins at the end of the left channel bridge and ends at the beginning of the right channel bridge. The right channel bridge TOD elevation will be constant at 1734.0 feet msl. After the end of the right channel bridge, two 100-foot curves are used to tie the new roadway profile to the existing grade. To maintain existing access to Poker Bar, a ramp roughly perpendicular to the proposed alignment will extend approximately 170 feet downstream from the edge of the proposed roadway alignment. The existing posts and cable "gates" will be replaced to limit access to the privately-owned bar. The existing driveway that provides access to parcel APN-25-670-18 will be reconstructed, raised, and has a 7 percent grade. The proposed bridge and roadway require approximately 4,000 cubic yards of imported embankment material

Table 2-17 shows top of approach, TOD, and top of structure elevations for this alternative.

TABLE 2-17

APPROACH, TOP OF DECK, AND TOP OF STRUCTURE ELEVATIONS – POKER BAR BRIDGE

Structure	Left Approach/top of deck elevation (ft)	Low chord elevation (ft)	Right approach/top of deck elevation (ft)	Top of Structure elevation (ft)[1]
Alternative 1 Left Channel Bridge	1747.4	1737.5	1740.0	1755.0
Alternative 1 Right Channel Bridge	1734.2	1730.91	1733.54	1740.0

Notes:[a] Elevation shown is top of truss for Alternative 1.

Typically, approach road elevations are the same as the top of bridge deck elevations. These elevations are shown on **Figure 2-16**.

Bridge Replacement

For Alternative 1, the replacement bridges will have an 18-foot clear roadway width and provide two 9-foot lanes. The total structure width including the truss members is 22 feet.

Slope Protection

The stream channel at the Poker Bar Bridges site does not appear to be degrading. Slope protection will be provided at abutment 2 of the left channel bridge and at both abutments for the right channel bridge (**Figure 2-16**). The limits

and size of slope protection will be shown on the final drawings. The riprap will be "light" class for 2:1 slopes and/or "1/4-ton" class for 1.5:1 slopes (**Table 2-5**).

Drainage

For Alternative 1, the bridge and roadway profiles will have a crowned cross section, which will provide sufficient gradient for drainage of any surface water. The left approach roadway, the roadway between the bridges and the right approach roadway will be paved. Drainage of the bridge decks will be designed to prevent direct discharge of stormwater from the decks to the live stream.

Right-of-Way

The existing bridges and the proposed bridges are located on private property. Additional permanent easement area both upstream and downstream will be required to accommodate the proposed bridge, roadway alignment and approach fills.

Temporary construction easements on both sides of the proposed bridge will be necessary for construction activities. Permanent easements will be required at all abutment and roadway locations. The recommended easements, existing easement limits, and existing property lines are shown on **Figure 2-17**. Stripping and removal of vegetation will be kept to a minimum, as required in the specifications.

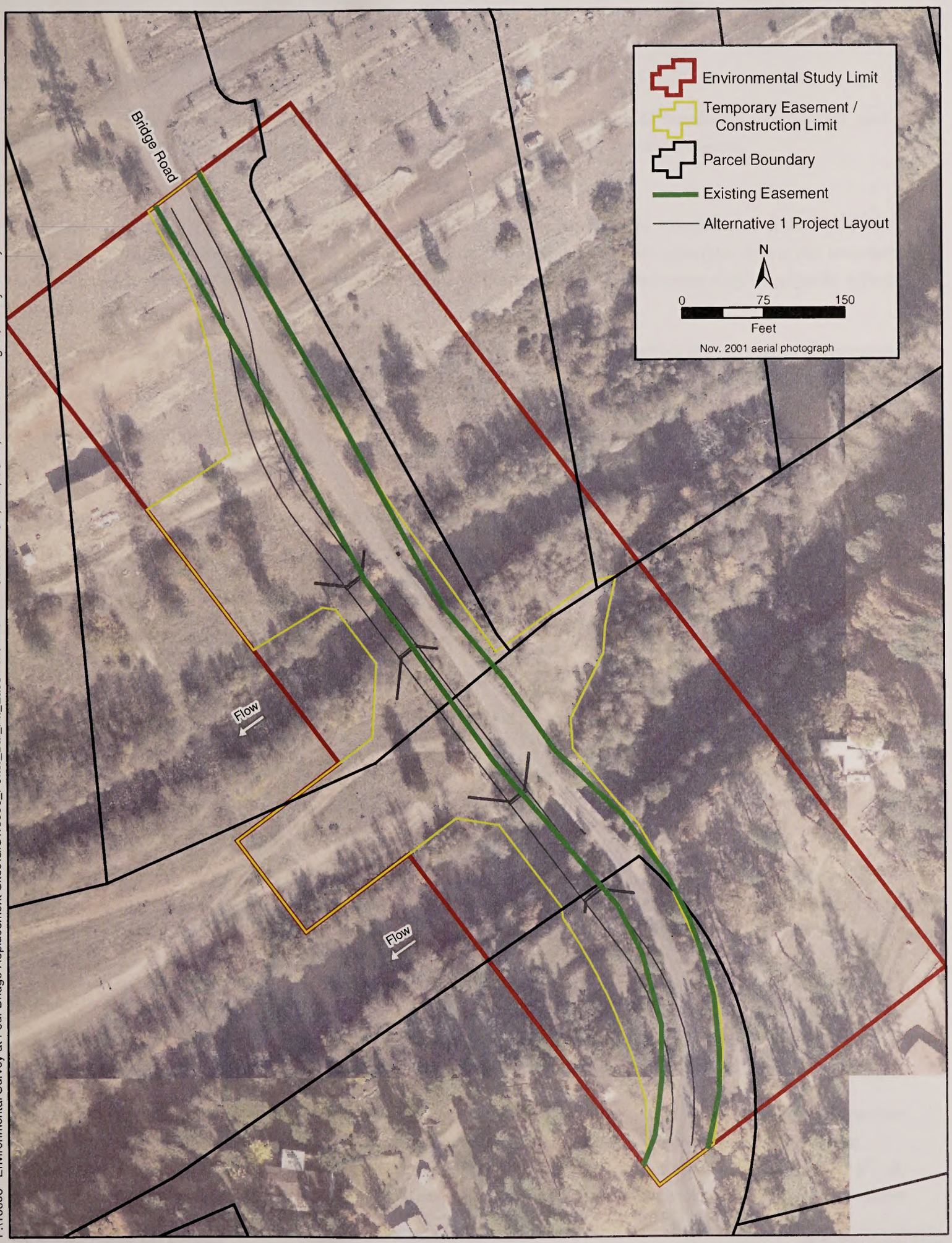
Utilities

No utilities will be impacted under this alternative.

Bridge Railing and Signing

Approach guard railing will be placed at the both ends of the bridges and along the length of the road between the two bridges. Access to the bar will be provided with a ramp beyond the ends of the approach roadway guardrail. The bridge guardrail will consist of weathering beam supported by steel beams. Approach guardrails will consist of weathering steel beam rail supported by timber posts. Signs will be posted near the left approach to designate that the bridge and road are private. Speed limit signs and other applicable signs will be added on each approach roadway.

Bridge railings must conform to the full-scale crash-test criteria established in NCHRP Report 350. This criterion has established TL-2 for roadways with design vehicle speeds of 25 mph. The bridge rail will conform to TL-2.



F:\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Poker_Bar_Alt_Easement.mxd Source: NSR, Inc.; USBR, Mid-Pacific Region; Trinity County 03-27-03 tkoehler

North State Resources, Inc.

Trinity River Bridges Project

Figure 2-17
Poker Bar Bridges Alternative 1
Construction Limit & Easements

Construction Criteria and Methods

Specifications

Construction specifications will be developed by the BOR, and will meet Caltrans Standard Specifications, and the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects.

Construction Process Overview

The following is a list of potential construction activities that may be required for Alternative 1 at the Poker Bar Bridge site. This list is not intended to be a precise or comprehensive construction schedule, and is not intended to show an exact sequence of construction activities. Some of these construction processes may temporarily affect property owner access.

- Construct staging area (a level area to allow for equipment set up and installing drilled shafts) at abutments.
- Construct drilled shafts
- Construct formwork for abutments
- Place reinforcement and concrete
- Assemble and erect prefabricated bridges
- Construct roadway approaches
- Tie new roadway approaches onto existing roads
- Open new bridges and road to traffic
- Remove existing railroad flatcar bridge superstructures
- Install slope protection as required
- Remove existing bridge abutments

The existing bridges will remain open to traffic and will provide access for homeowners and construction equipment and personnel during construction. Keeping the existing bridge open will minimize impacts to the homeowners.

Traffic control will be the provided by the contractor and it is the contractor's responsibility to provide access for the homeowners. Temporary closures of Poker Bar Road, Bridge Road, and the existing bridges may be necessary at times during construction, particularly near the completion of the work (i.e., when tying the new road alignment onto the existing road alignment).

In-River Construction

The proposed bridge abutments will be located outside of the active low-flow channel (Q = 450 cfs). This will allow the contractor the ability to access and install supports without encroaching upon the l active low-flow channel.

Construction activities are not anticipated within the active low-flow channel. However, if instream construction measures are unavoidable and require implementation outside of the June 15th to September 15th dry-season construction window, all potential salmonid spawning habitat will be isolated from use prior to September 1st. A qualified fisheries biologist will use a conservative definition of suitable spawning area and will ensure that these

areas are protected from use by appropriate exclusionary materials (e.g., anti-spawning mats or fencing). This effort will avoid any impacts to early fish life stages that are immobile and very sensitive to the crushing effects of heavy equipment operation on the stream bottom. These materials will be sufficiently anchored to the stream bottom during the instream work period to preclude spawning anadromous fish from digging redds in the work area. They will be removed after completion of instream work and prior to flood season. They will be anchored sufficiently to ensure that an unplanned high flow release from the dam will not cause them to release from their anchorage and create a litter problem.

A seep well may be constructed outside the active low-flow channel to provide construction "make-up" water for all construction activities. A backhoe may be used to excavate and backfill soils at the seep well site. The well may consist of large diameter, perforated pipe placed vertically in the soil to a depth below the groundwater level. The annular space around the pipe will be filled with large aggregate to promote groundwater flow to the well. All material and water required for drilling and installing the drilled shafts will be contained and disposed of off-site by the contractor at an approved and appropriate disposal site. The specifications will instruct the contractor that no cement fines, drilling fluids or contaminated water will be allowed to enter the ground or stream. The containment and disposal system has not been determined, since equipment to do this type of work varies by contractor to contractor.

Dewatering Activities

All material and water required for drilling and installing the bent and abutments will be contained and disposed of off-site by the contractor at an approved and appropriate disposal site. The specifications will instruct the contractor that no cement fines, drilling fluids or contaminated water will be allowed to enter the ground or stream. The containment and disposal system has not been determined, since equipment to do this type of work varies from contractor to contractor.

Should dewatering be required for construction at the site, the dewatering discharge will be contained in a tank or onsite containment/infiltration basin. In the event that an infiltration basin is used, discharge to the basin will be limited to water/groundwater only and will not be contaminated with deleterious construction byproducts.

Traffic Control / Detour

Temporary closures of Poker Bar Road, Bridge Road, and the bridges may be needed at certain times during construction and near the completion of the work, when tying the new road alignment onto the existing road alignment.

Bridge Demolition

Removal of the existing bridge structures will occur after the new bridges and road are open to traffic. Under Alternative 1, the existing bridge structures would be removed in a manner similar to what was previously provided for the Proposed Action.

Contractor Staging and Storage Areas

The existing bridges will provide primary site access. Contractor staging areas are expected to be available within the temporary easement areas. Staging areas will be necessary for installing drilled shafts at the new bridge abutments. This staging area will consist of a level area to allow for equipment set up and installing drilled shafts. The temporary

construction easement areas are shown in **Figure 2-15**. The contractor will be required to place lath, flagging or other suitable markers at the edge of the temporary construction easements to show workmen the limits within which they must stay.

Air Pollution and Dust Control

Efforts will be made to minimize air pollution. The BOR specifications require that the contractor comply with all applicable air pollution control rules, regulations, ordinances, and statutes. Contract documents will specify that the contractor will be responsible to limit dust by watering construction site areas used by trucks and vehicles.

Fill Import and Export

Embankment material is typically a well-graded mixture of clayey sand (SC), sandy lean clay (CL), lean clay (CL), silt (ML), or silty sand (SM). Embankment material gradation typically has a minimum of 20 percent by dry weight, of soil particles passing a No. 200 United States Standard sieve, with a maximum particle size of 4 inches in maximum dimension. The material shall be obtained from on-site excavation or other approved sources and will be free from chemical contamination, vegetation, roots, trash, debris, or other unsatisfactory material. All lumps, clods, and oversize particles shall be removed.

When rip-rap for slope protection is required, the rock used for rip-rap shall be hard, dense, and durable. Either quarried rock or boulders may be used for rip-rap. Since no rip-rap is available onsite, all material used for slope protection will be imported. The rock in rip-rap shall be reasonably well graded from the maximum size down to the minimum size as previously shown in **Table 2-5**.

An estimated 4000 cubic yards of embankment material will be required for embankment and structural backfill. This material will be hauled from an approved borrow source. An estimated 1700 cubic yards of rip-rap will be required for slope protection and abutment protection.

Slope protection will be placed adjacent to each abutment. The left approach roadway will be raised approximately 10 feet and will have 2:1 side slopes. Slope protection will be provided on both sides of the right approach roadway. The road between the two bridges will be raised approximately 7 feet to an elevation of 1734.0 feet msl at the left bridge abutment 2 and transition to an elevation of 1734.0 feet msl at the right bridge abutment 1. Slope protection will be provided on both sides of the road between the two bridges.

Water Pollution Prevention

The contractor shall also implement the same water pollution control measures that were previously identified for the Proposed Action.

Utility Relocation

Since no utilities will be impacted under this proposal, no relocation will be necessary.

Tentative Schedule

Construction associated with the Trinity River Bridges Project cannot begin until the environmental document has been adopted by the BOR, the BLM, and the County; preparation of final design, plans, specifications, and cost estimates; acquisition of ROW; acquisition of permits; and design approvals from state and federal agencies.

Construction of the bridge abutments, superstructures and decking is anticipated to occur in the summer/fall season of 2004. Construction of new roadway alignment may extend into the winter/spring of 2005. Demolition of existing structures will occur the following summer. Total construction time is anticipated to be approximately 195 days. An additional 60 days (approximately 30 days of in-water, and adjacent bank work) will be required to remove abutments. It is anticipated that removal of the old bridge, clean up, fine grading, and revegetation of the site would be accomplished after the new bridge is open to traffic in the second season of work (June 15 to September 15, 2005).

2.4.4 Biggers Road

No-Action Alternative

Under the No-Action (No Project) Alternative, the BOR and the County would not proceed with proposed bridge and roadway improvements at the Biggers Road project site. The No-Action (No-Project) Alternative is the existing condition of the bridge and ancillary features at the Biggers Road project site. The following subsection provides a detailed description of the existing features and the associated conditions.

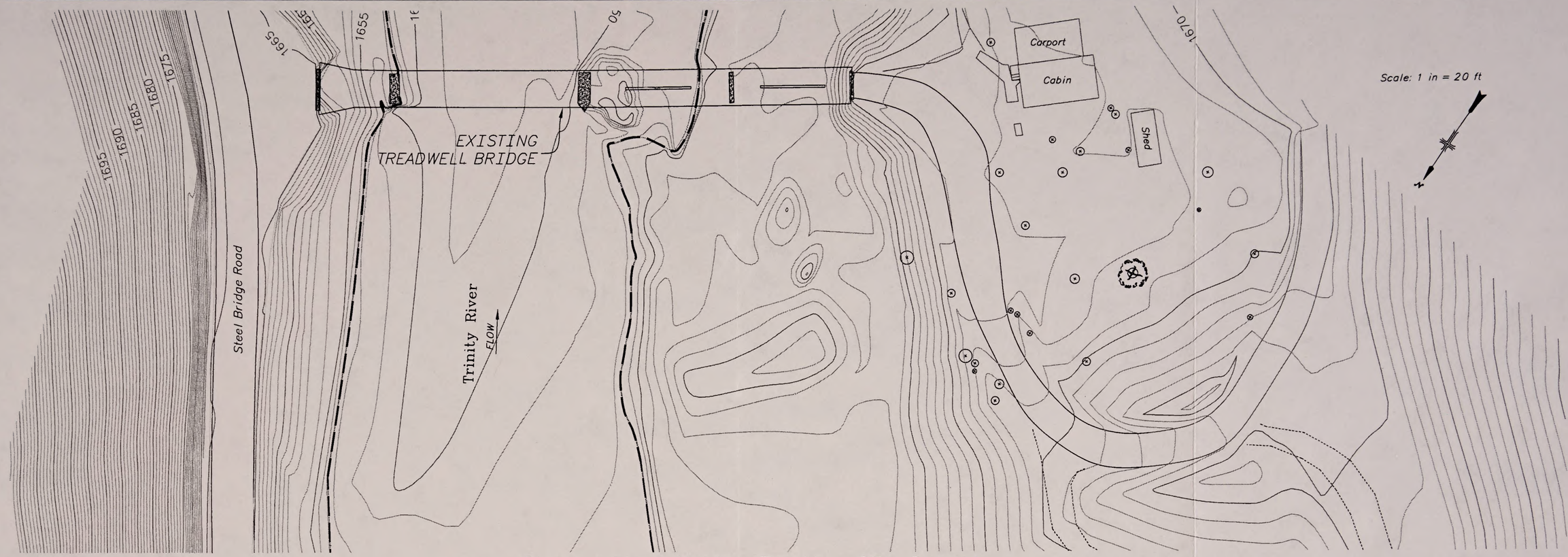
Existing Conditions

The existing Biggers Road Bridge, located about 13 miles downstream of Lewiston Dam, spans the Trinity River near RM 97. The bridge is located off Steel Bridge Road, about three miles upstream (east) from Douglas City, California (**Figure 2-18**). The single-lane bridge serves nine parcels on the right bank of the river. The structure is a four-span, 204-foot-long, 12-foot-wide, railroad flatcar bridge, supported on concrete piers and abutments. For discussion purposes, the four spans are numbered as spans1 through 4, from left to right, looking downstream. The span lengths are 30 feet, 71.9 feet, 55.5 feet, and 46.5 feet, respectively. The abutment on the left is abutment 1, and the abutment on the right is abutment 2. From left to right, the piers are numbered pier 1, pier 2 and pier 3.

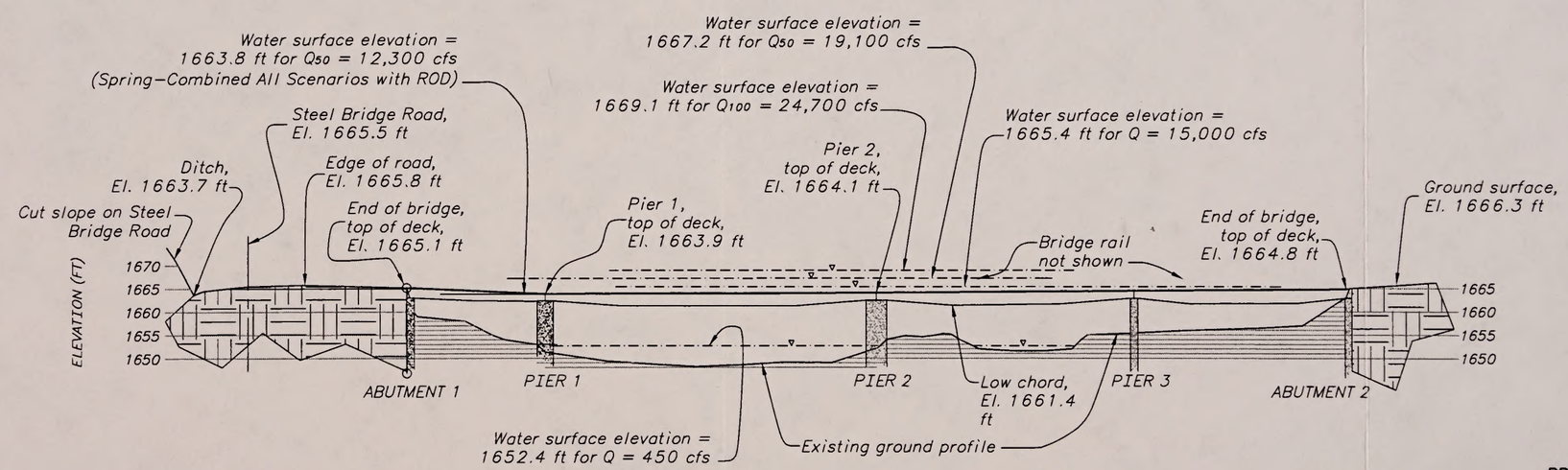
The bridge deck consists of 4-inch-thick by 12-inch-wide wood planks, placed perpendicular to the direction of traffic. Two rows of three 4-inch-thick by 12-inch-wide running boards are placed longitudinally on top of the deck. The running boards distribute wheel loads to the bridge deck. The bridge rail consists of 4-inch-square wood posts and railing. The age of the existing wood decking and bridge railing is not known, but the bridge decking, running boards and railing appear to have experienced quite a bit of weathering.

Abutment 1 is covered with gravel material on the surface and is founded on bedrock. Gravel or fill encases portions of the superstructure near abutment 1. The piers are founded on schistose bedrock that is hard (rings when struck with a hammer) and massive in appearance. On the landside of piers 1 and 2, the concrete forms a tight bond with the rock foundation. On the waterside of piers 1 and 2, undercutting extends for the entire length of both piers. It is not clear whether the concrete or the rock foundation eroded. The undercut area was probed and no reinforcement or anchor bolts were encountered. This indicates that pier concrete may not be anchored to the bedrock. Sand with grass cover is found around pier 3. Hand digging and hand auguring drill holes around the pier revealed that the pier is founded on and tightly bonded to bedrock. Abutment 2 is founded on bedrock and partly encased in gravel or fill.

To tie the bridge down to the piers, steel chains were wrapped around 1-inch diameter steel cables, which were cast into the top of the piers. The timber decking has weathered considerably and it is damaged to the point that approximately 30 percent of the bridge wood planks need to be replaced. The horizontal members of the bridge railing are missing along most of span 2.



Biggers Road Bridge Existing Site Layout



Treadwell Bridge Profile

(Looking downstream)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT – CALIFORNIA
TRINITY RIVER DIVISION
TRINITY RIVER MAINSTEM FISHERY RESTORATION

TRINITY RIVER BRIDGES

BIGGERS ROAD BRIDGE

PROPOSED ACTION–OVERTOPPED TRUSS BRIDGE
PLAN, PROFILE AND SECTION

DESIGNED JESUS G. ROMERO CHECKED NAME
DRAWN JESUS G. ROMERO TECH. APPR. NAME
PEER REVIEW NAME
DENVER, COLORADO

F:\Projects\10006 - Trinity River Bridge Replacement\GIS\Working_CAD_Files\Biggers Road existing.dwg Source: U.S. Bureau of Reclamation 03-25-03 tkoehler

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Trinity River Bridges Project

Figure 2-18
Biggers Road Bridge Existing Site Layout & Profile

The railroad flatcars that make up the bridge spans are all different depths and types. The low chord elevation is 1661.4 feet, and it occurs along span 3. The railroad flat cars range in depth, but the deepest section is approximately 3 feet. The timber rail posts area approximately 3 feet high. **Table 2-18** shows top of approach, TOD, and top of structure elevations for the existing bridge.

TABLE 2-18
APPROACH, TOP OF DECK, AND TOP OF STRUCTURE ELEVATIONS – BIGGERS ROAD BRIDGE

Structure	Left Approach/top of deck elevation (ft)	Low chord elevation (ft)	Right approach/top of deck elevation (ft)	Top of Structure elevation (ft)[a]
Existing	1665.1	1661.4	1664.8	1668.5

Notes:

[a] Elevation shown is top of bridge rail for the existing bridge.

Typically, approach road elevations are the same as the top of bridge deck elevations. The age of the concrete piers and railroad flatcars is unknown. According to local residents, the railroad flatcar bridge was constructed in the early 1970s to replace an existing log-span bridge. It appears that the railroad flatcars were not new when they were installed, and were modified to fit the existing piers and abutments. The railroad flatcar used for span 1 has a large notch cut into the bottom flange and web to make it fit at the abutment end. The railroad flatcar for span 4 was not long enough and an additional piece was spliced onto the end near pier 3. A load test to determine the bridge's load rating was performed by Bridge Diagnostics, Inc., Boulder, Colorado. The results of the test indicate that portions of the bridge have low live load ratings, with span 2 experiencing the lowest rating.

In addition to the concerns stated above, even though the possibility of a vehicle traveling at a high rate of speed is not likely, the existing bridge rail is very weak and not capable of resisting any vehicle load or redirecting any type of vehicle.

The approach roadways immediately adjacent to the bridge are gravel surfaced. The left approach is of varying width and intersects Steel Bridge Road about 25 feet east of abutment 1. The right approach leading away from the bridge is 12 feet wide on a sharp horizontal right curve that provides access to the other parcels. A private residence is located about 60 feet west of abutment 2. The bridge horizontal and vertical alignments are shown on **Figure 2-18**.

There are no overhead utilities, and there do not appear to be any underground utilities in the vicinity of the bridge. There is a shallow domestic water well and pump about 20 feet upstream of pier 3. A satellite dish is located approximately 220 feet north of abutment 2.

Hydraulics

A hydraulic model was developed and calibrated to match measured water surface elevations upstream of the existing bridge using HEC-RAS. **Table 2-19** shows the water surface elevations for the flows being considered at the Biggers Road Bridge site. These water surface elevations were calculated with the bridge substructure and superstructure in place. Also included in the hydraulic analysis was a determination of the maximum flow that can pass under the existing bridge without obstruction.

TABLE 2-19
FLOW DISCHARGES AT BIGGERS ROAD BRIDGE @ RM = 97.35
EXISTING BRIDGE INCLUDING SUPERSTRUCTURE
TRINITY DAM DISCHARGES PLUS TRIBUTARY FLOWS

Flow description	LC = 1661.4 TOD[e] = 1663.9 (cfs)	Water Surface Elevations (ft)
Maximum unobstructed flow	Q_{max} = 9,000	El. = 1661.4
Return Period Peak Flow (Annual with ROD)[a]	Q_{50} = 19,100 Q_{100} = 24,700	El. = 1667.2 El.= 1669.0
Maximum Controlled - flow Release[b]	Q_{MCR} = 17,200	El. = 1666.5
Estimated flow during 1/1/97[c]	Q_{1997} = 15,000	El. = 1665.4
Typical maximum flow between July 22 to October 15 of each year[d]	Q = 450	El. = 1652.4

Notes:

[a] Return Period Peak Flow – Annual with ROD – Combined winter and spring considering all 5 ROD water year type. Includes a possible 11,000 cfs release from Lewiston Dam in the spring.

[b] Maximum Controlled-Flow Release – 13,750 cfs is the maximum controlled release from Trinity Dam. Combining this flow with 100-year May/June peak tributary flow gives the flow value shown.

[c] Scott McBain of McBain and Trush provided flow estimates for the January 1, 1997 flood event.

[d] Lewiston Dam releases to the Trinity River based on the ROD. 450 cfs is the proposed flow release at Lewiston Dam between July 22 and October 15 of each year. 300 cfs is the proposed flow release at Lewiston Dam between October 16 and April 15 of each year.

[e] Top of deck elevation shown is lowest point along the entire bridge, occurring at pier 1.

LC = Bridge low chord, or bottom of beam elevation at lowest point under the bridge.

TOD = Top of Deck elevation. When top of deck elevation varies across the length of the bridge, the value shown in the table is the lowest top of deck elevation.

RM = Trinity River mile.

msl = Elevation above mean sea level (feet).

Q = Flow rate (cfs)

As shown on **Table 2-18**, the existing bridge low chord elevation is 1661.4 feet msl. The TOD elevations range from approximately 1663.9 to 1665.1 feet msl. **Table 2-19** indicates that the maximum unobstructed flow is 9,000 cfs, with a water surface elevation of 1661.4 feet msl. This indicates that for any flows greater than 9,000 cfs, the flow will be backed up behind the bridge superstructure.

The hydraulic analysis also included an estimate of the January 1, 1997 flood flow, estimated to be 15,000 cfs upstream of Rush and Grass Valley Creeks. There are no significant hydraulic anomalies represented in the hydraulic model that require explanation at this site. An accurate calibration was easily achieved for 5,000 cfs (+/- 0.5 feet)

and computed water surface elevations for the January 1, 1997 flood matched well with eyewitness accounts of what actually occurred during this event. The hydraulic analysis shows that the water surface elevation for this flow is 1665.4 feet msl, indicating the bridge superstructure backed up the flow, and water overtopped the bridge about 0.3 to 1.5 feet (depending on location along bridge). Some residents who witnessed the flood event have said that about 1.25 feet of water overtopped the bridge, and that the bridge rail horizontal members were removed to allow for flow and debris to pass over.

Scour Analysis

The DWR collected cross section survey data in the Trinity River from Lewiston Dam downstream to the Trinity River North Fork confluence during the few years prior to the January 1, 1997 flood. Cross section data in the vicinity of the Trinity River bridges was collected again during the 1999 to 2001 time-period. Comparison of the pre-1997 and post-1997 cross section profile plots indicates that no significant long-term channel degradation resulted from the January 1, 1997 flood. The 1997 flood flow was estimated to be 15,000 cfs at the Biggers Road Bridge. Short term localized scour may have occurred during this event, but was not sufficient to fail any piers or abutments. Sediment deposits from the upstream bed quickly filled in any scour holes that may have developed at or near the bridge during the 1997 flood.

Geological data collected at the existing Biggers Road Bridge indicates that all three piers are founded on bedrock (Sherer 2001). The bedrock is continuous across the entire bridge cross section and is exposed in several places. Portions of the riverbed are covered with a sediment layer that averages less than 1 foot deep and consists of large gravel, cobbles, and boulders. There is a pocket of sediment deposits approximately 5 feet deep near the westernmost pier (furthest right), but it is confined to a small area and the pier is likely founded on the underlying bedrock. The abutments have about 10 feet of fill above the bedrock layer that could potentially be scoured during a flood event, but the abutments are also anchored to the existing bedrock. Essentially all overlying material (above bedrock) could be removed during a high flow event without significantly changing the cross section shape or undermining the existing Biggers Road Bridge piers or abutments.

For evaluating scour at this site, it was assumed that all remaining bed material would be scoured from the bed and moved downstream during a 100-year flood event (24,700 cfs). This situation represents the worst-case scenario that could potentially occur at Biggers Road Bridge. The fact that all existing piers and abutments are founded on bedrock at Biggers Road Bridge eliminates the need for scour depth computations for the No Action Alternative. The exposed or shallow continuous bedrock layer would control the scour across the entire cross section.

Proposed Action (Replacement Upstream with a Two-Span Steel Truss Structure)

The proposed Biggers Road Bridge will be constructed approximately 137 feet upstream of and parallel to the existing bridge (**Figure 2-19**). The bridge will remain on private property and will be owned collectively by property owners of the "Treadwell Subdivision".

The proposed bridge type is a two-span prefabricated steel truss with reinforced concrete deck. The bridge will be approximately 230-feet-long (one 140-foot span and one 90-foot span), with a 10-foot clear roadway width, designed to carry HS20 loading (see Design Criteria). New structures designed for HS20 vehicles are capable of carrying any legal load vehicle and do not require posted limits. The superstructure and guardrail will be fabricated with weathering steel. The pre-project Steel Bridge Road profile or vertical alignment begins to overtop when flows reach

Q = 15,000 cfs). The existing Steel Bridge Road profile will remain unchanged except for the area in the immediate proximity of the bridge left approach intersection.

The proposed bridge will be designed for overtopping at approximately 18,000 cfs on the left (east) side near the intersection of the bridge and Steel Bridge Road. Though a small portion of the bridge is subject to overtopping at flows higher than the projected ROD flows. The Proposed Action avoids construction of roadway improvements including several hundred feet of retaining wall adjacent to Steel Bridge Road. A turnout area will be provided near the south end of the left abutment, parallel to Steel Bridge Road, to allow vehicles to enter and exit Steel Bridge Road safely. The two-span structure will provide adequate flow area under the bridge, reducing backwater effects and velocities for lower flows. The proposed abutments and single column bent will support the bridge superstructure. The bent will be located outside of the active low-flow channel (Q = 450 cfs) of the Trinity River.

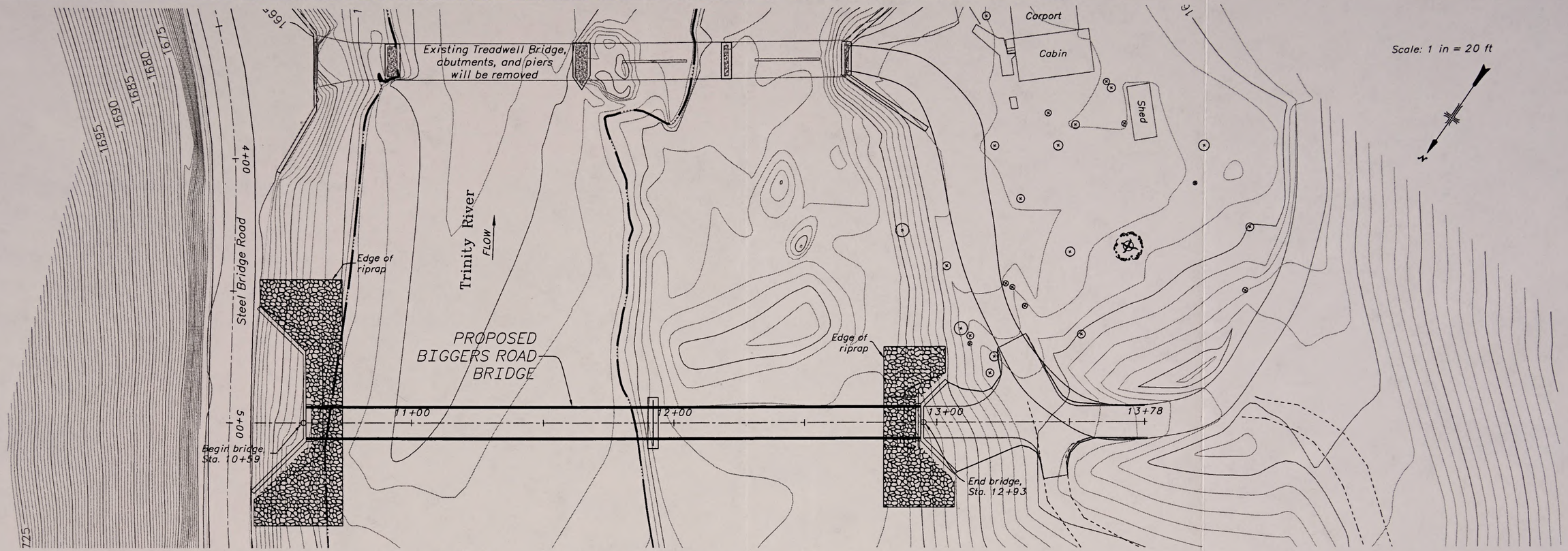
The bent will be a single 3.5-foot by 7-foot column supported by a reinforced concrete spread footing. The bent has a small "footprint," impacts the least amount of area, and is relatively quick to install. It is estimated that a single working platform with an area 24 foot wide by 40 foot long (960 ft^2) will be needed for equipment setup and access for bent construction. Dump trucks may be used to transport material for construction of platform. Bent construction will be done using standard equipment and procedures (contractor's choice) based on type of equipment available. The equipment may be a track dozer or excavator. Abutments and wing walls will be of reinforced concrete.

All material and water required for drilling and installation of the steel bar anchors at the bent will be contained and disposed of off-site by the contractor at an approved and appropriate disposal site. The specifications will instruct the contractor that no cement fines, drilling fluids or contaminated water will be allowed to enter the ground or stream. The containment and disposal system has not been determined, since equipment to do this type of work varies from contractor to contractor. Slope protection will be placed adjacent to each abutment. The right approach roadway will be raised approximately 3 feet, and will have 2:1 side slopes.

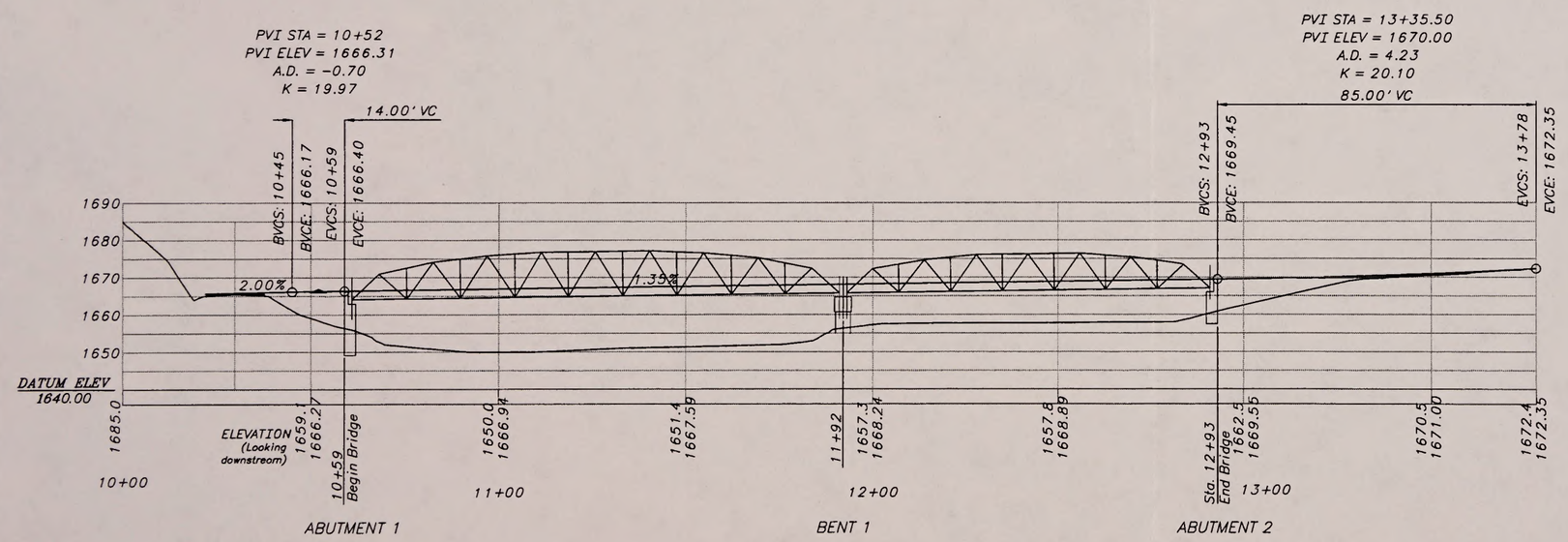
Design Criteria

The following documents were referenced to develop the bridge design:

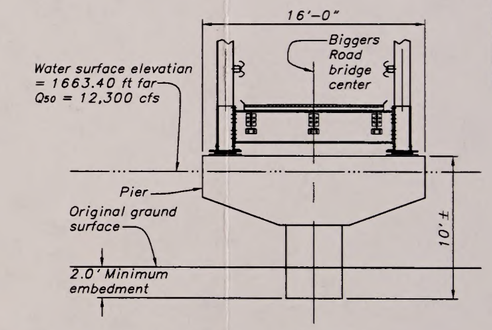
- AASHTO *A Policy on Geometric Design of Highways and Streets* (Fourth Edition, 2001)
- AASHTO *Standard Specification for Highway Bridges* (16th Edition, 1996, with Interims and Revisions by Caltrans)
- Caltrans and FHWA bridge planning and design manuals
- Trinity County Transportation Department Design Guidelines, policies and requirements
- Trinity County's Fire Safe Ordinance
- *Estimation of 50-and 100-Year Tributary Accretion Floods; Lewiston Dam to Treadwell Bridge, Trinity River, California*, McBain and Trush, April 30, 2002
- *Trinity River Restoration Program – Trinity River Bridge Hydrologic Analysis, Draft Report,* BOR Technical Service Center, April 2003
- *Trinity River Restoration Program, Trinity River Bridges: Hydraulic, Scour, and Riprap Sizing Analysis,* BOR Technical Service Center, April 9, 2003.



Biggers Road Bridge Proposed Site Layout



Biggers Road Bridge Proposed Profile



Section @ Bent

Notes

1. Water Surface Elevation = 1669.6 ft for Q_{100} = 24,700 cfs
2. Water Surface Elevation = 1663.4 ft for Q_{50} = 12,300 cfs (Return Period Peak Flow, Spring with ROD)
3. New bridge is located approximately 137 ft upstream of existing bridge

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BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT – CALIFORNIA
TRINITY RIVER DIVISION
TRINITY RIVER MAINSTEM FISHERY RESTORATION

TRINITY RIVER BRIDGES

BIGGERS ROAD BRIDGE
PROPOSED ACTION–OVERTOPPED TRUSS BRIDGE
PLAN, PROFILE AND SECTION

DESIGNED JESUS G. ROMERO CHECKED NAME
DRAWN JESUS G. ROMERO TECH. APPR. NAME
PEER REVIEW NAME
DENVER, COLORADO

F:Projects/10006 - Trinity River Bridge Replacement/GIS/Working_CAD_Files/Biggers Road Proposed.dwg Source: U.S. Bureau of Reclamation 04-10-03 tkoehler

North State Resources, Inc

Trinity River Bridges Project

Figure 2-19
Biggers Road Bridge Proposed Action Site Layout & Profile

Hydraulics

A HEC-RAS hydraulic model was developed and calibrated to match measured water surface elevations upstream of the existing bridge. **Table 2-20** shows the calculated water surface elevations that were used to develop the Proposed Action.

TABLE 2-20

FLOW DISCHARGES AT BIGGERS ROAD BRIDGE @ RM = 97.35

PROPOSED ACTION BRIDGE

TRINITY DAM DISCHARGES PLUS TRIBUTARY FLOWS

Flow description	LC = 1664.4 TOD = 1666.4 (cfs)	Water Surface Elevations (ft)
Return Period Peak Flow (Spring with ROD)[a]	Q_{50} = 12,300 Q_{100} = 12,500	El. = 1663.4 El.= 1663.5
Return Period Peak Flow (Annual with ROD)[b]	Q_{50} = 19,100 Q_{100} = 24,700	El. = 1668.1 El.= 1669.6
Maximum Controlled - Flow Release[c]	Q_{MCR} = 17,200	El. = 1665.8
Estimated flow during 1/1/97[d]	Q_{1997} = 15,000	El. = 1664.7

Notes:

[a] Return Period Peak Flow – Annual with ROD – Combined winter and spring considering all 5 ROD water year type. Includes a possible 11,000 cfs release from Lewiston Dam in the spring.

[b] Maximum Controlled-Flow Release – 13,750 cfs is the maximum controlled release from Trinity Dam. Combining this flow with 100-year May/June peak tributary flow gives the flow value shown.

[c] Scott McBain of McBain and Trush provided flow estimates for the January 1, 1997 flood event.

[d] Lewiston Dam releases to the Trinity River based on the ROD. 450 cfs is the proposed flow release at Lewiston Dam between July 22 and October 15 of each year. 300 cfs is the proposed flow release at Lewiston Dam between October 16 and April 15 of each year.

LC = Bridge low chord, or bottom of beam elevation at lowest point under the bridge.

TOD = Top of Deck elevation. When top of deck elevation varies across the length of the bridge, the value shown in the table is the lowest top of deck elevation.

RM = Trinity River mile.

msl = Elevation above mean sea level (feet).

Q = Flow rate (cfs)

The water surface elevations at the Treadwell house (near RM 97.34) are 1666 feet msl for Q_{50} = 19,100 cfs and 1668.3 feet msl for Q_{100} = 24,700 cfs. The water surface elevation for Q = 15,000 cfs is approximately 1664.3 feet msl at the Treadwell residence.

Scour Analysis

Scour computations were performed for the proposed, overtopping, two span, steel truss Biggers Road Bridge 137 feet upstream of the existing bridge. For 24,700 cfs, the deepest scour hole occurs at the left abutment. Total scour at that location is 20.6 feet deep resulting in a bottom of scour hole elevation of approximately 1635 feet at the left abutment. The total scour depth at the single pier and right abutment is estimated at about 9.6 feet and 9.5 feet, producing bottom of scour hole elevations of 1646 feet and 1651 feet msl respectively.

The BOR drill crews determined the depth to bedrock at the proposed Biggers Road Bridge site (Mongano 2003). At the proposed right abutment, approximately 1 foot of alluvium covers existing bedrock. A drill log near the proposed

pier location indicates a depth to bedrock of about 5 feet. Based on the drill logs, the resulting elevations of bedrock are about 1660 feet msl at the right abutment and about 1651 feet msl at the single pier. Visual observation and geologic field mapping at the proposed left abutment site identified exposed continuous bedrock from above the water surface elevation to a point approximately two-thirds of the way across the channel. Exposed bedrock elevation at the proposed left abutment is about elevation 1656 feet msl.

Each of the computed scour elevations is well below the estimated elevation of the existing bedrock at the proposed bridge location. Therefore, assuming the 100-year flood was capable of removing the armor layer, scour depth would be limited by the existing Abrams Schist (bedrock) layer across the entire channel.

Alignment and Design Speed

The proposed bridge will be located 137 feet upstream of and parallel to the existing bridge. The intersection of the new bridge alignment with Steel Bridge Road is at a 90 degree angle. Abutment wing walls will extend from the abutment towards Steel Bridge Road at forty-five degrees. This configuration allows for vehicles turning from and onto Steel Bridge Road, which is only 16 feet wide. A turnout south of the abutment and parallel to Steel Bridge Road will be provided to allow vehicles exiting the bridge to merge onto Steel Bridge Road. On the right (west) bank of the river, the bridge centerline will be tangent with the existing turn that is currently used to provide access to the private parcels. A new, raised gravel-surfaced driveway (constructed over the existing driveway) will provide access to the Treadwell carport and cabin areas.

Roadway Approaches

The replacement bridge type is a two-span, prefabricated steel truss with reinforced concrete deck. The bridge will have a 10-foot clear roadway width and provide a single 10 foot lane. The total structure width including the truss members will be about 14 feet. The replacement bridge will be 234 feet long with left and right spans of about 142 and 92 feet, respectively.

The proposed bridge alignment begins at Steel Bridge Road, with a TOD elevation of 1666.4 feet msl. The bridge profile has a 1.3 percent grade and the TOD elevation on the right side of the river is 1669.5 feet msl (to match the existing ground). A turnout area will be provided near the south end of the bridge, parallel to Steel Bridge Road. To produce a smooth transition from the existing Steel Bridge Road surfacing to the new bridge, an asphalt concrete overlay of 4-inch maximum thickness will be applied to the existing roadway surface for an approximate distance of 110 feet each way from the left approach.

Table 2-21 shows top of approach, TOD, and top of structure elevations for the Proposed Action. Typically, approach road elevations are the same as the top of bridge deck elevations.

TABLE 2-21

APPROACH, TOP OF DECK, AND TOP OF STRUCTURE ELEVATIONS – BIGGERS ROAD BRIDGE

Structure	Left Approach/top of deck elevation (ft)	Low chord elevation (ft)	Right approach/top of deck elevation (ft)	Top of Structure elevation (ft)[a]
Proposed Action	1666.4	1664.4	1669.5	1678

Notes: [a] Elevation shown is top of bridge rail for the existing bridge

Bridge Replacement

The replacement bridge will have a 10-foot clear roadway width. The total structure width including the truss members is 14 feet.

Slope Protection

Slope protection will be provided at both abutments (**Figure 2-19**). The limits and size of slope protection will be shown on the final drawings. The riprap will be "facing" class for 2:1 slopes and/or "light" class for 1.5:1 slopes (**Table 2-5**).

Drainage

The proposed bridge and roadway profiles will have a crowned cross section, which will provide sufficient gradient for drainage of any surface water. Drainage of the bridge deck will be designed to prevent direct discharge of stormwater from the deck to the live stream.

Right-of-Way

The existing bridge and the proposed bridge are located on private property. Temporary construction easements on both sides of the proposed bridge, as well as the right approach and Steel Bridge Road will be necessary for construction activities. Stripping and removal of vegetation will be kept to a minimum, as required in the specifications.

The approach roadway fill on the left side of the river will impact Steel Bridge Road. It is estimated that Steel Bridge Road will require intermittent daily closures approximately 4 hours per day between the hours of 9 am and 3 pm (assumed periods of low traffic volumes) for approximately two weeks during construction of retaining wall and raising Steel Bridge Road.

Temporary construction easements on both sides of the proposed bridge, as well as the right approach and Steel Bridge Road will be necessary for construction activities. The recommended temporary construction easement, and existing property lines are shown on **Figure 2-20**. Stripping and removal of vegetation will be kept to a minimum, as required in the specifications.

Utilities

No overhead utilities were observed and there do not appear to be any underground utilities in the vicinity of the existing bridge. There is a shallow domestic water well and pump about 20 feet upstream of pier 3 (existing bridge). It is expected that this domestic water well and pump will not be impacted by any construction activities.

Bridge Railing & Signing

Approach guard railing will be placed at the both ends of the bridge. Bridge rail will consist of weathering steel posts and cable. Approach guardrails will consist of weathering steel beam rail supported by timber posts. Signs will be placed at the intersection with Steel Bridge Road to indicate that the bridge and road are private. Speed limit signs and other applicable signs will be placed on each approach roadway.

The bridge railings used on the bridge will conform to the full-scale crash-test criteria established in NCHRP Report 350. This criterion has established TL-2 for roadways with design vehicle speeds of 25 mph. The bridge rail will conform to TL-2 Construction Criteria and Methods

Specifications

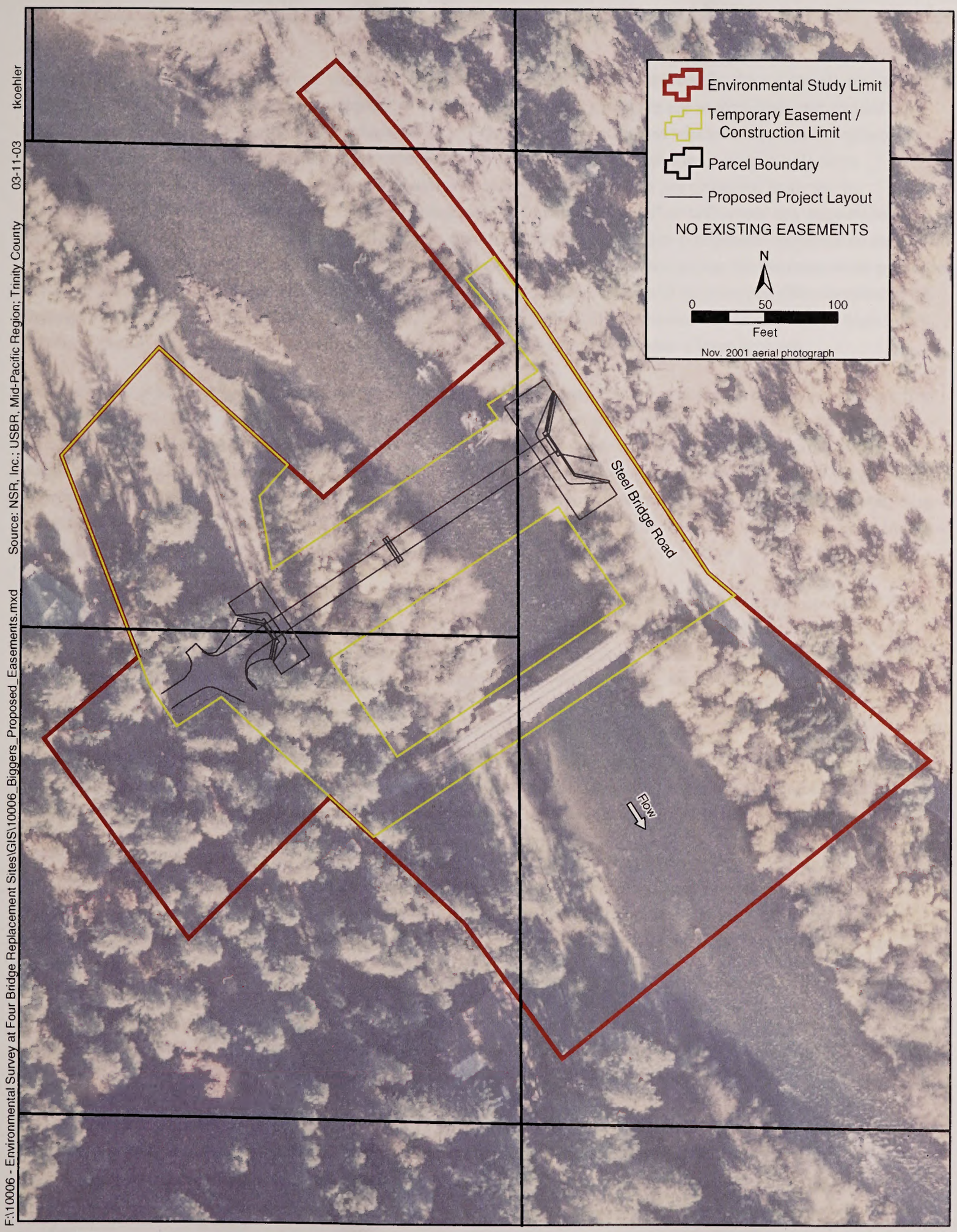
Construction specifications will be developed by the BOR, and will meet Caltrans Standard Specifications, and the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects.

Construction Process Overview

The following is a list of potential construction activities required for the Proposed Action at the Biggers Road Bridge site. This list is not intended to be a precise or comprehensive construction schedule, and is not intended to show an exact sequence of construction activities. Some of these construction processes may temporarily affect property owner access.

- Construct staging areas for rock drilling and installation of bent and abutments
- Install temporary shoring/reinforcement at span 3 of existing bridge to enhance construction equipment access to right side of river
- Shaft drilling and construction of formwork for abutments
- Excavation of spread footing for bent
- Place reinforcement and concrete
- Assemble and erect Steel Bridge trusses
- Construct roadway approaches
- Tie new roadway approaches onto existing roads
- Open new bridge and road to traffic
- Remove existing railroad flatcar bridge superstructures
- Install slope protection as required
- Remove existing bridge abutments and piers

The existing bridge will remain open to traffic and provide access for homeowners, construction equipment and personnel during construction. Temporary shoring or reinforcement of span 3 of the existing bridge may be required to enable larger loads to access the right side of the river. Keeping the existing bridge open will minimize impacts to the homeowners. Closing the existing bridge to construct a new bridge along the existing alignment would require a temporary bridge to provide access during construction. The contractor will provide traffic control and it is the contractor's responsibility to maintain access for the homeowners. Temporary closures of Steel Bridge Road may be necessary at certain times during construction.



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Trinity River Bridges Project

Figure 2-20
Biggers Road Bridge Proposed Action
Construction Limit & Easements

In-River Construction

The Proposed Action does not require work within the active low-flow channel except for rip-rap installation and removal of the existing bridge superstructures. If instream construction measures are unavoidable and require implementation outside of the June 15th to September 15th dry-season construction window, all potential salmonid spawning habitat will be isolated from use prior to September 1st. A qualified fisheries biologist will use a conservative definition of suitable spawning area and will ensure that these areas are protected from use by appropriate exclusionary materials (e.g., anti-spawning mats or fencing). This effort will avoid any impacts to early fish life stages that are immobile and very sensitive to the crushing effects of heavy equipment operation on the stream bottom. These materials will be sufficiently anchored to the stream bottom during the instream work period to preclude spawning anadromous fish from digging redds in the work area. They will be removed after completion of instream work and prior to flood season. They will be anchored sufficiently to ensure that an unplanned high flow release from the dam will not cause them to release from their anchorage and create a litter problem.

Depending on contractor methods, demolition and removal of pier 2 may require installation of an in-channel access ramp extending from the right bank to the pier. The in-channel ramp/crossing will be constructed on the existing bridge alignment. The ramp will be constructed of specified, washed spawning-size gravels and placed with an upper surface approximately 1 foot below the active low-flow water surface elevation. Estimated quantity of gravel is approximately 60 cubic yards for the approximate 20-foot by 40-foot low-flow channel crossing. Landing mats may be utilized on the ramp surfaces if necessary to support the equipment used. After demolition, the ramp gravel will be distributed/contoured over the adjacent channel bottom.

A seep well may be constructed outside the active low-flow channel to provide construction "make-up" water for all construction activities. A backhoe may be used to excavate and backfill soils at the seep well site. The well may consist of large diameter, perforated pipe placed vertically in the soil to a depth below the groundwater level. The annular space around the pipe will be filled with large aggregate to promote groundwater flow to the well.

Dewatering Activities

Should dewatering be required for construction at the site, the dewatering discharge will be contained in a tank or onsite containment/infiltration basin. In the event that an infiltration basin is used, discharge to the basin will be limited to water/groundwater only and will not be contaminated with deleterious construction byproducts.

All material and water required for drilling and installing the bent and abutments will be contained and disposed of off-site by the contractor at an approved and appropriate disposal site. The specifications will instruct the contractor that no cement fines, drilling fluids or contaminated water will be allowed to enter the ground or stream. The containment and disposal system has not been determined, since equipment to do this type of work varies from contractor to contractor.

Pier Construction

The bent will be a single 3.5-foot by 7-foot column supported by a reinforced concrete spread footing. The bent has a small "foot print," impacts the least amount of area, and is relatively quick to install. It is estimated that a single working platform with an area 24 feet wide by 40 feet long (960 ft^2) will be needed for equipment setup and access for bent construction. Dump trucks may be used to transport material for construction of platform. Bent construction will be done using standard equipment and procedures (contractor's choice) based on type of equipment available. The equipment may be a track dozer and a drill rig. Abutments and wing walls will be of reinforced concrete.

Traffic Control / Detour

Traffic will be maintained on the existing bridge and roadway alignment as the new bridge is constructed. Single lane closures and staged construction on Steel Bridge Road are anticipated to complete the construction of the approach roadway at the east side of the bridge. A minimum of one lane of traffic will be accommodated through the construction site at all times.

Bridge Demolition

The existing bridge will remain open to traffic and provide access for homeowners and construction equipment and personnel during construction. Following completion of new bridge construction, the existing bridge will be removed from the site. The railroad flat cars can be dismantled and salvaged. Demolition of the flatcars and pilings may require use of a crane, cutting torches and/or other demolition equipment. The existing concrete abutments and piers will be demolished and broken up into pieces that can be easily handled with typical construction equipment, such as a crane and haul trucks. No construction debris resulting from demolition will be allowed to enter the stream. The contractor will be required to dispose of material offsite at an acceptable disposal site, dependent on the type of material encountered. Any demolition activities that may create lead paint chips will require a lead containment system

Demolition of the flatcars and pilings may require use of a crane, cutting torches and/or other demolition equipment. The selected method of disposition of the existing bridge components (demolition or re-use elsewhere) will determine the amount and type of wastes produced. The following procedures will apply to the contractor's selected demolition and/or removal activities:

- Asphalt and tar waste from the bridge should be recycled.
- Because of the presence of lead paint on the existing bridge structure, none of the painted metal portions of the existing bridges will be sawed, burned, or sanded. If cutting torches are used on painted metal surfaces, contractor will comply with appropriate regulations for safety, disposal and collection of byproducts. If the contractor chooses disposal, the existing bridgework shall be disposed of in a properly licensed landfill. Demolition workers should be protected according to the provisions of 8 CCR 1532, "Lead in Construction." Prior to demolition or re-use of the bridge, a licensed lead-based paint removal contractor should remove any loose, lead-based paint that is chipping or peeling from the bridges. The lead waste (paint chips, dust, etc.) should be disposed of appropriately.
- There will likely be some amount of treated wood waste produced. If disposal of treated wood waste is required, it will be disposed of at an appropriate landfill site.

Contractor Staging and Storage Areas

The existing bridge will provide primary site access. Contractor staging areas are expected to be available within the temporary easement areas, specifically, between the Steel Bridge Road centerline and the active low-flow channel downstream of the left abutment and upstream of the right abutment on the Biggers parcel (**Figure 2-20**). The temporary construction easement areas are shown in **Figure 2-20**. The contractor will be required to place lath, flagging or other suitable markers at the edge of the temporary construction easements to show workmen the limits within which they must stay.

Air Pollution and Dust Control

Efforts will be made to minimize air pollution. The BOR specifications require that the contractor comply with all applicable air pollution control rules, regulations, ordinances, and statutes. Contract documents will specify that the contractor will be responsible to limit dust by watering construction site areas used by trucks and vehicles.

Fill Import and Export

Embankment material is typically a well-graded mixture of clayey sand (SC), sandy lean clay (CL), lean clay (CL), silt (ML), or silty sand (SM). Embankment material gradation typically has a minimum of 20 percent by dry weight, of soil particles passing a No. 200 United States Standard sieve, with a maximum particle size of 4 inches in maximum dimension. The material shall be obtained from on-site excavation or other approved sources and will be free from chemical contamination, vegetation, roots, trash, debris, or other unsatisfactory material. All lumps, clods, and oversize particles shall be removed.

When riprap for slope protection is required, the rock used for riprap shall be hard, dense, and durable. Either quarried rock or boulders may be used for riprap. Since no riprap is available onsite, all material used for slope protection will be imported. The rock in riprap shall be reasonably well graded from the maximum size down to the minimum size as previously shown in **Table 2-5**, Rock Sizes and Riprap Thickness.

An estimated 325 cubic yards of embankment material will be required for embankment and structural backfill at the Biggers Road Bridge site. This material will be hauled from an approved borrow source. An estimated 450 cubic yards of riprap will be required for slope protection and abutment protection. Slope protection will be placed adjacent to each abutment.

Water Pollution Prevention

The contractor shall also implement water pollution control measures that conform to applicable and appropriate permits. The contractor will be required to use extreme care to prevent dirt, debris and miscellaneous demolition byproducts from entering the stream. Some of the key water pollution control measures that shall be implemented are listed below:

- The contractor shall exercise every reasonable precaution to protect the Trinity River from pollution with fuels, oils, bitumen, calcium chloride, and other harmful materials and shall conduct and schedule operations to avoid or minimize muddying and silting of the river. Care shall be exercised to preserve roadside vegetation beyond the limits of construction.
- Water pollution control work is intended to provide prevention, control and abatement of water pollution to the Trinity River, and shall consist of constructing those facilities that may be shown on the plans, specified herein or in the special provisions, or directed by the Engineer.
- The contractor shall provide temporary water pollution control measures, including but not limited to, dikes, basins, ditches, and applying straw and seed, which become necessary because of the contractor's operations. The contractor shall coordinate water pollution control work with all other work done on the contract.
- Before starting any work on the project, the contractor shall develop an agency-approved program to control water pollution effectively during construction of the project. The program shall show the schedule for the erosion control work included in the contract and for all water pollution control measures that the contractor proposes to take in connection with construction of the project to minimize the effects of the operations upon

adjacent streams and other bodies of water. The contractor shall not perform any clearing and grubbing or earthwork on the project until the program has been accepted.

- Where erosion that will cause water pollution is probable due to the nature of the material or the season of the year, the contractor's operations shall be so scheduled that permanent erosion control features will be installed concurrently with or immediately following grading operations.
- Nothing in the terms of the contract shall relieve the contractor of the responsibility for compliance with Sections 5650, 1601 and 12015 of the Fish and Game Code, or other applicable statutes relating to prevention or abatement of water pollution.
- Where working areas encroach on live streams, barriers adequate to prevent the flow of muddy water into streams shall be constructed and maintained between working areas and streams. During construction of the barriers, muddying of streams shall be held to a minimum.
- Water containing mud or silt from aggregate washing or other operations shall be treated by filtration, or retention in a settling pond, or ponds, adequate to prevent muddy water from entering live streams.
- Oily or greasy substances originating from the contractor's operations shall not be allowed to enter or be placed where they will later enter a live stream.
- Portland cement or fresh Portland cement concrete shall not be allowed to enter flowing water of streams.
- Material derived from roadway work shall not be deposited in a live stream channel where it could be washed away by high stream flows.
- Where there is possible migration of anadromous fish in streams affected by construction on the project, the contractor shall conduct work operations that allow free passage of the migratory fish.

Utility Relocation

No utilities will be impacted under this proposal. No relocation will be necessary.

Tentative Schedule

Construction is anticipated to begin in the fall 2003 with installation of access routes, temporary crossing of side-channel, staging areas, mid-channel bar work platform, right abutment engineered fill-slopes and modification of existing bridge alignment. Subsequent construction of the left abutment, bent structure, bridge superstructure, bridge decking, approach roadways, partial fine-grading and associated revegetation will occur prior to the following spring. Finally, removal of the existing bridge and foundations, construction of remaining areas of fine-grading and associated revegetation will occur during the following summer. Total construction time (not including demolition in subsequent construction season) is anticipated to be approximately 135 days. In-river work for each element of this project is anticipated as follows: 10 days on the right abutment (5 days in 2003 and 5 days in 2004), 7 days on the side channel crossing installation and removal (5 days in 2003, 2 days in 2004). Demolition and clean up is projected to require about 50 days (including approximately 14 days of in-water pier removal).

Construction associated with the Project cannot begin until the environmental document has been adopted by the BOR, the BLM, and the County; preparation of final design, plans, specifications, and cost estimates; acquisition of ROW; acquisition of permits; and design approvals from state and federal agencies.

The project schedule is based on a Contract Award during summer/fall 2003. Construction of the bridge abutments, bent, superstructure, decking and roadway approaches are anticipated to occur in the fall/winter seasons. Demolition of the existing bridge will occur the following summer. Total construction time (not including demolition in subsequent construction season) is anticipated to be approximately 135 days. Demolition and removal of the old bridge will require an additional 50 days (including 20 days of in-water work to remove pier and left bank abutment).

Alternative 1 (Replacement Upstream with a Raised Two-Span Steel Truss Structure)

The Alternative 1 bridge will be constructed approximately 137-feet upstream and parallel to the existing bridge (**Figure 2-21**). The bridge will remain on private property, and will be the property of the Treadwell Subdivision Property Homeowners Association. The proposed bridge consists of a two-span prefabricated steel truss with reinforced concrete deck. The proposed bridge will be 234 feet long, with a 10-foot clear width, designed to carry HS20 live loading, and consisting of one 142-foot-long span and one 92-foot-long span. The prefabricated steel truss heights are 9 feet and 7 feet respectively. The bridge superstructure and guardrail will be fabricated with weathering steel. Steel Bridge roadway profile or vertical alignment will need to be raised approximately 4 feet for the bridge to provide hydraulic freeboard over the Trinity River. Steel Bridge Road approaches will be paved with asphalt concrete. A turnout area will be provided near the south end of abutment 1, parallel to Steel Bridge Road.

The Alternative 1 bridge follows the same alignment as the Proposed Action bridge but is designed at a higher elevation to pass the Q_{50} (annual with ROD) + 2 feet design criteria. As is the case with the Proposed Action, the longer spans will provide for a wider flow area under the bridge that will reduce the backwater elevation, and water velocities. Under Alternative 1, the abutments and single column bent will support the bridge superstructure and are located outside of the low-flow active channel (Q = 450 cfs). This will allow the contractor the ability to access and install the supports without encroaching upon the low-flow active channel.

This bridge requires a bent to be constructed outside the low-flow active channel. The contractor will be required to provide access to the bent location. This will require construction of a temporary working pad in a manner that provides a stable route for equipment and contractor personnel, and minimizes impacts to beneficial uses, including aquatic organisms, domestic and agricultural water supplies. To construct the temporary working platform, the contractor may use an excavator and a dozer.

The bent will be a single 3.5-foot by 7-foot column supported by a reinforced concrete spread footing. The bent has a small "footprint," impacts the least amount of area, and is relatively quick to install. It is estimated that a single working platform with an area 24 feet-wide by 40 feet-long (960 ft^2) will be needed for equipment setup and access for bent construction. Dump trucks may be used to transport material for construction of platform. Bent construction will be done using standard equipment and procedures (contractor's choice) based on type of equipment available. The equipment may be a track dozer and a drill rig. Abutments and wing walls will be of reinforced concrete.

All material and water required for drilling and installing the grouted dowels will be contained and disposed of off-site by the contractor at an approved and appropriate disposal site. The specifications will instruct the contractor that no cement fines, drilling fluids or contaminated water will be allowed to enter the ground or stream. The containment and disposal system has not been determined, since equipment to do this type of work varies from contractor to contractor. Slope protection will be placed adjacent to each abutment. Slope protection will also be provided on both sides of the left approach roadway to protect the roadway embankment from flows that may overtop

and may erode the road. The left approach roadway will be raised approximately 4 feet, the right approach roadway will be raised approximately 3 feet and both roadway cross sections will have 2:1 side slopes.

Design Criteria

The same documents referenced in the development of bridge design criteria under the Proposed Action, were also used in the development of the Alternative 1 bridge structure.

Hydraulics

The HEC-RAS hydraulic model was revised to calculate water surface elevations for Alternative 1. The calculated water surface elevations are shown in **Table 2-22**.

TABLE 2-22

FLOW DISCHARGES AT BIGGERS ROAD BRIDGE @ RM = 97.35

NEW 137 FEET UPSTREAM OF EXISTING BRIDGE

TRINITY DAM DISCHARGES PLUS TRIBUTARY FLOWS

Flow description	LC = 1664.4 TOD = 1666.4 (cfs)	Water Surface Elevations (ft)
Return Period Peak Flow (Spring with ROD)	Q_{50} = 12,300 Q_{100} = 12,500	El. = 1663.3 El.= 1663.4
Return Period Peak Flow (Annual with ROD) [a]	Q_{50} = 19,100 Q_{100} = 24,700	El. = 1666.4 El.= 1668.8
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[a] Return Period Peak Flow – Annual with ROD – Combined winter and spring considering all 5 ROD water year type. Includes a possible 11,000 cfs release from Lewiston Dam in the spring.

[b] Maximum Controlled-Flow Release – 13,750 cfs is the maximum controlled release from Trinity Dam. Combining this flow with 100-year May/June peak tributary flow gives the flow value shown.

[c] Scott McBain of McBain and Trush provided flow estimates for the January 1, 1997 flood event.

[d] Lewiston Dam releases to the Trinity River based on the ROD. 450 cfs is the proposed flow release at Lewiston Dam between July 22 and October 15 of each year. 300 cfs is the proposed flow release at Lewiston Dam between October 16 and April 15 of each year.

LC = Bridge low chord, or bottom of beam elevation at lowest point under the bridge.

TOD = Top of Deck elevation. When top of deck elevation varies across the length of the bridge, the value shown in the table is the lowest top of deck elevation.

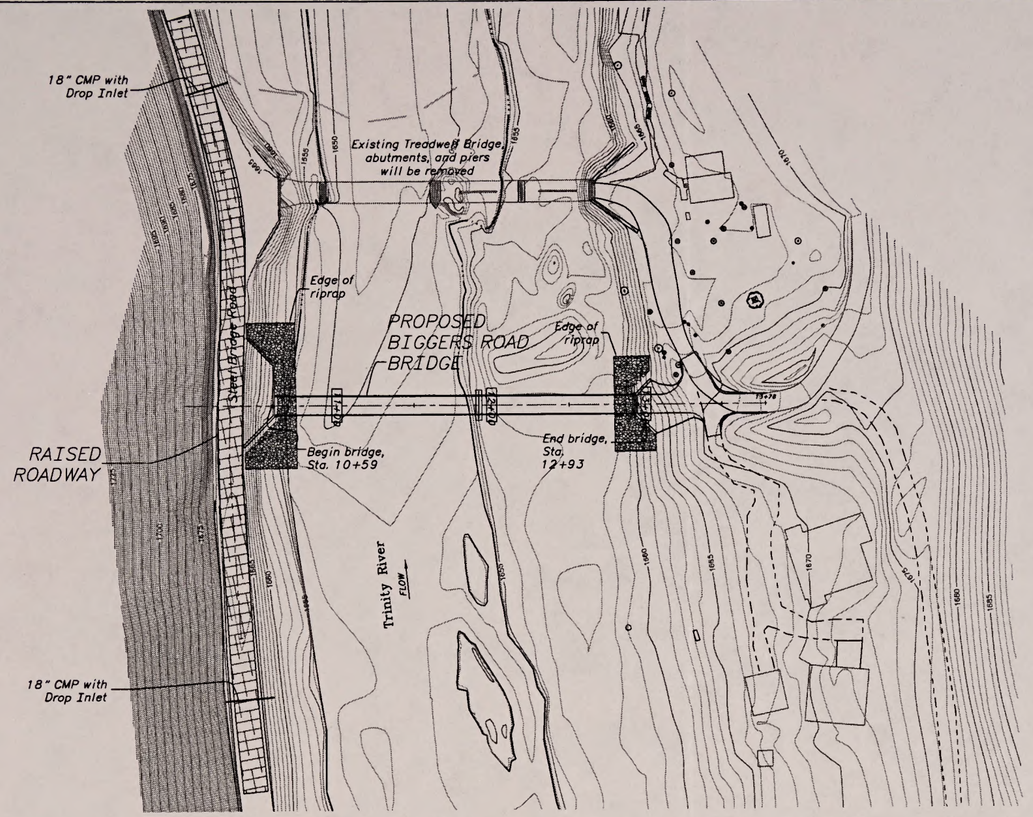
RM = Trinity River mile.

msl = Elevation above mean sea level (feet).
Q = Flow rate (cfs)

The water surface elevations at the Treadwell house (near RM 97.34) are 1666.0 feet msl for Q_{50} = 19,100 cfs and 1668.3 feet msl for Q_{100} = 24,700 cfs. The water surface elevation for Q = 15,000 cfs is approximately 1664.3 feet msl at the Treadwell house.

Scour Analysis

At 24,700 cfs, the scour potential for the Alternative 1 Biggers Road Bridge (deck elevation set above the 100-year flood) was estimated. The computed total scour depth at the pier was about 9.6 feet. The total scour depths at the left and right abutments were estimated as 18.7 feet and 7.8 feet respectively. The resulting bottom of scour hole

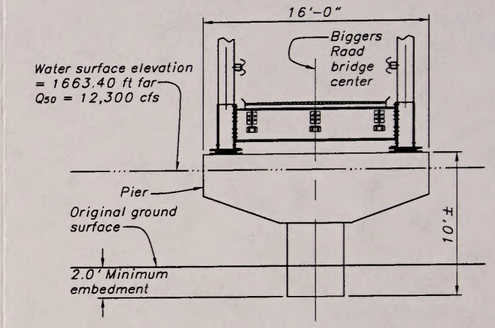


Scale: 1 in = 50 ft

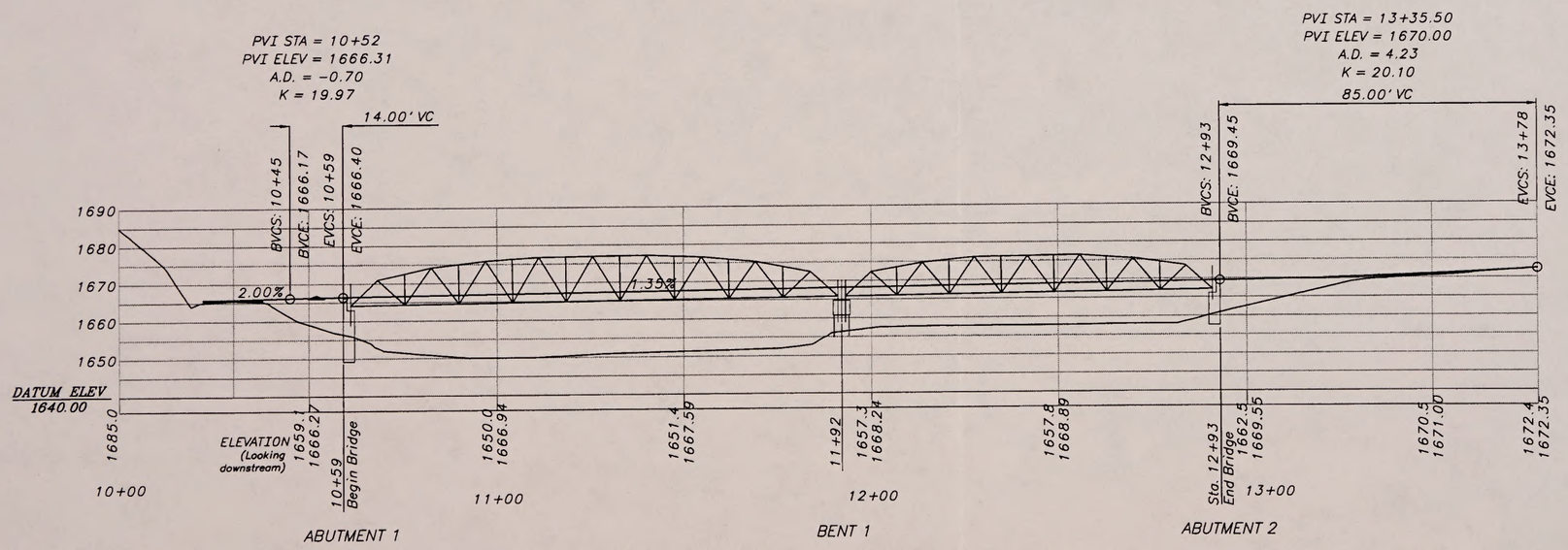
Biggers Road Bridge Alternative 1 Site Layout

Notes

1. Water Surface Elevation = 1669.6 ft for Q_{100} = 24,700 cfs
2. Water Surface Elevation = 1663.4 ft for Q_{50} = 12,300 cfs (Return Period Peak Flow, Spring with ROD)
3. New bridge is located approximately 137 ft upstream of existing bridge



Section @ Bent



Biggers Road Bridge Alternative 1 Profile

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT – CALIFORNIA
TRINITY RIVER DIVISION
TRINITY RIVER MAINSTEM FISHERY RESTORATION

TRINITY RIVER BRIDGES

BIGGERS ROAD BRIDGE
PROPOSED ACTION–OVERTOPPED TRUSS BRIDGE
PLAN, PROFILE AND SECTION

DESIGNED JESUS G. ROMERO CHECKED NAME
DRAWN JESUS G. ROMERO TECH. APPR. NAME
PEER REVIEW NAME
DENVER, COLORADO

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North State Resources, Inc

Trinity River Bridges Project

Figure 2-21
Biggers Road Bridge Alternative 1
Site Layout & Profile

elevations would be approximately 1637 feet msl at the left abutment, 1646 feet msl at the single pier, and 1653 feet msl at the right abutment.

The estimated scour depths are all below the bedrock at this site. The existing Abrams Schist layer would control the scour depth for the Alternative 1 Biggers Road Bridge.

Any new bridge constructed at this site should be founded on bedrock. Abutments and piers should be able to withstand the removal of all overlying alluvium without compromising the structural integrity of the bridge. The presence of shallow bedrock at this site makes founding the new bridge on the hard layer feasible.

Alignment and Design Speed

Steel Bridge Road will be raised up to 4 feet above the existing elevation (approximately). The new Steel Bridge roadway profile will be designed to provide the optimal sight distance. To meet the alignment and design speed requirements, the Steel Bridge Road will be raised for approximately 300 feet (linear distance) on either side of the road intersection with the new bridge. The Alternative 1 bridge alignment begins at Steel Bridge Road and is set level, with a TOD elevation of 1670.8 feet msl.

Roadway Approaches

From the south approach, 118-foot and 50-foot vertical curves are used to raise the roadway profile from the existing grade to match the new bridge deck elevation of 1671.35 feet msl. The proposed roadway profile is level at this elevation for 25 feet on either side of bridge centerline. Past the bridge, 50-foot and 98-foot vertical curves are used to lower the proposed roadway profile to match the existing roadway profile. The approach slopes are 4 percent.

A retaining wall is placed on the river side of Steel Bridge Road to retain the raised roadway embankment and maintain the 16-foot travel width. The retaining wall may consist of reinforced earth with brick facade and would be placed on the riverside of Steel Bridge Road to support and retain the raised roadway embankment. The wall cross section is shown in **Figure 2-21**. This type of wall does not require a large footing and it is relatively easy to install. The wall will extend for approximately 600 feet (linear distance). A turnout area will be provided near the south end of the bridge, parallel to Steel Bridge Road. The asphalt concrete surfacing of the raised profile will be installed to make a smooth transition to the existing roadway surfacing.

Table 2-23 shows top of approach, TOD, and top of structure elevations for Alternative 1.

TABLE 2-23

APPROACH, TOP OF DECK, AND TOP OF STRUCTURE ELEVATIONS – BIGGERS ROAD BRIDGE

Structure	Left Approach/top of deck elevation (ft)	Low chord elevation (ft)	Right approach/top of deck elevation (ft)	Top of Structure elevation (ft)[1]
Alternative 1	1670.8	1668.8	1670.8	1680.0

Notes:

[a] Elevation shown is top of truss for Alternative 1.

Bridge Replacement

The replacement bridge will have a 10-foot clear roadway width. The total structure width including the truss members is 14 feet.

Slope Protection

Slope protection will be provided at both abutments. The limits and size of slope protection will be shown on the final drawings. The riprap will be "facing" class for 2:1 slopes and/or "light" class for 1.5:1 slopes (**Table 2-5**).

Drainage

The proposed bridge and roadway profiles will have a crowned cross section, which will provide sufficient gradient for drainage of any surface water. Drainage of the bridge deck will be designed to prevent direct discharge of stormwater from the deck to the live stream.

Right-of-Way

The approach roadway fill on the left side of the river will impact Steel Bridge Road. It is estimated that Steel Bridge Road may require intermittent daily closures approximately 4 hours per day between the hours of 9 am and 3 pm (assumed periods of low traffic volumes) for approximately two weeks during construction of retaining wall and raising Steel Bridge Road.

Temporary construction easements on both sides of the proposed bridge, as well as the right approach and Steel Bridge Road will be necessary for construction activities. The recommended temporary construction easement, and existing property lines are shown on **Figure 2-22**. Stripping and removal of vegetation will be kept to a minimum, as required in the specifications.

Utilities

No overhead utilities were observed and there do not appear to be any underground utilities in the vicinity of the existing bridge. There is a shallow domestic water well and pump about 20 feet upstream of pier 3 (existing bridge). It is expected that this domestic water well and pump will not be impacted by any construction activities.

The County does not expect this project to impact the facilities or long-term access for the various districts and utilities. Future utility access (conduits) can be attached to the precast concrete beams or bridge rail.

Bridge Railing & Signing

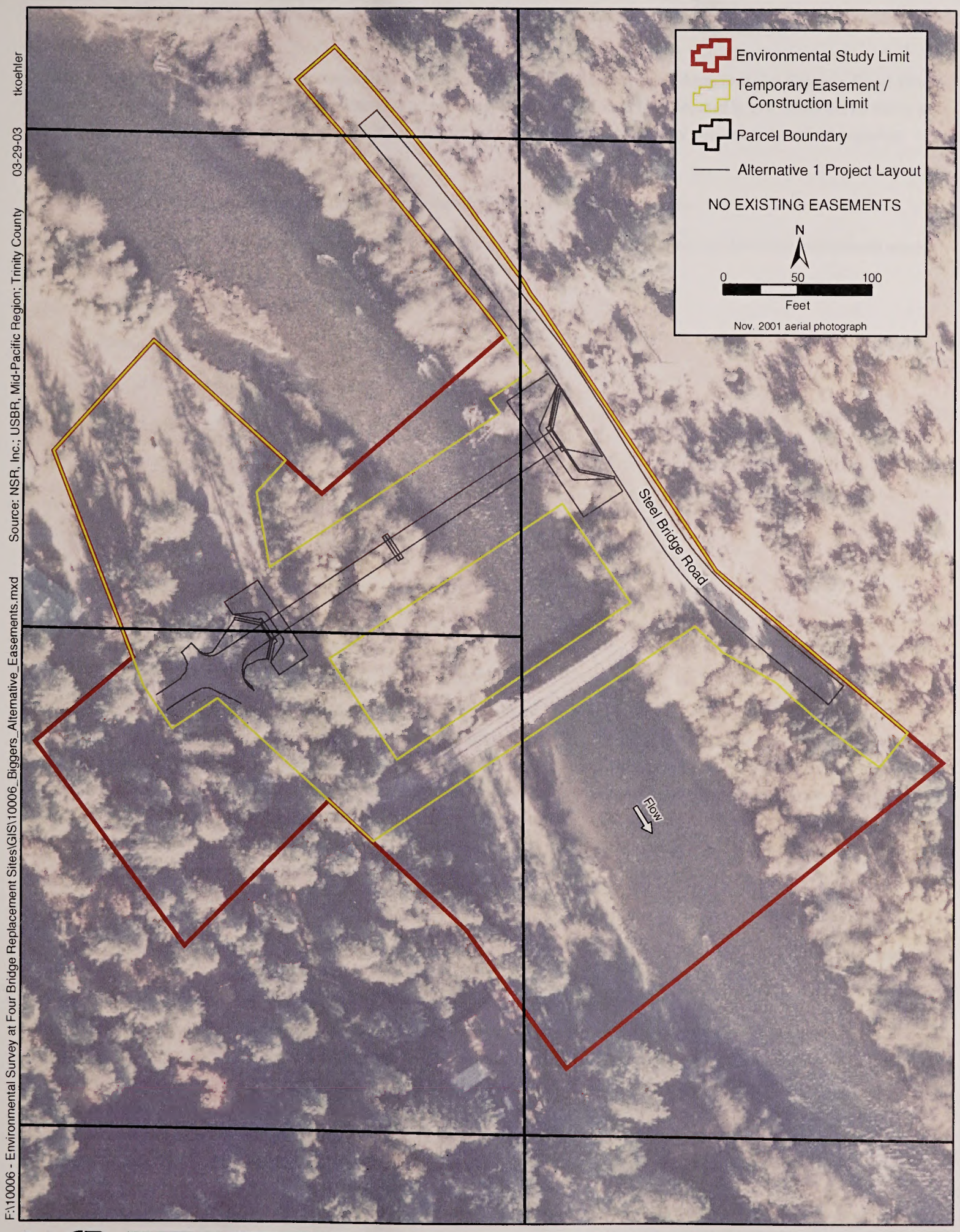
Approach guard railing will be placed at the both ends of the bridge. The bridge rail will consist of weathering steel posts and cable. Approach guardrails will consist of weathering steel beam rail supported by timber posts. Signs will be needed at the intersection with Steel Bridge Road to designate that the bridge and road are private.

The bridge railings used on the bridge will conform to the full-scale crash-test criteria established in NCHRP Report 350. This criterion has established TL-2 for roadways with design vehicle speeds of 25 mph. The bridge rail will conform to TL-2.

Construction Criteria and Methods

Specifications

Construction specifications will be developed by the BOR, and will meet Caltrans Standard Specifications, and the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects.



F:\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Biggers_Alternative_Easements.mxd Source: NSR, Inc.; USBR, Mid-Pacific Region; Trinity County 03-29-03 tkoehler

North State Resources, Inc.

Trinity River Bridges Project

Figure 2-22
Biggers Road Bridge Alternative 1
Construction Limits & Easements

Construction Process Overview

The following is a list of potential construction activities required for the Proposed Action at the Biggers Road Bridge site. This list is not intended to be a precise or comprehensive construction schedule, and is not intended to show an exact sequence of construction activities. Some of these construction processes may temporarily affect property owner access.

- Construct staging areas for rock drilling and installation of bent and abutments
- Install temporary shoring/reinforcement at span 3 of existing bridge to enhance construction equipment access to right side of river
- Shaft drilling and construction of formwork for abutments
- Excavation for spread footing at bent
- Place reinforcement and concrete
- Assemble and erect Steel Bridge trusses
- Construct roadway approaches
- Tie new roadway approaches onto existing roads
- Open new bridge and road to traffic
- Remove existing railroad flatcar bridge superstructures
- Install slope protection as required
- Remove existing bridge abutments and piers

The existing bridge will remain open to traffic and provide access for homeowners, construction equipment and personnel during construction. Temporary shoring or reinforcement of span 3 of the existing bridge may be required to enable larger loads to access the right side of the river. Keeping the existing bridge open will minimize impacts to the homeowners. Closing the existing bridge to construct a new bridge along the existing alignment would require a temporary bridge to provide access during construction. The contractor will provide traffic control and it is the contractor's responsibility to maintain access for the homeowners. Temporary closures of Steel Bridge Road may be necessary at certain times during construction.

In-River Construction

For Alternative 1, the bridge and retaining wall construction do not require work within the active low-flow channel. Construction activities are not anticipated within the active low-flow channel. However, if instream construction measures are unavoidable and require implementation outside of the June 15th to September 15th dry-season construction window, all potential salmonid spawning habitat will be isolated from use prior to September 1st. A qualified fisheries biologist will use a conservative definition of suitable spawning area and will ensure that these areas are protected from use by appropriate exclusionary materials (e.g., anti-spawning mats or fencing). This effort will avoid any impacts to early fish life stages that are immobile and very sensitive to the crushing effects of heavy equipment operation on the stream bottom. These materials will be sufficiently anchored to the stream bottom during the instream work period to preclude spawning anadromous fish from digging redds in the work area. They will be

removed after completion of instream work and prior to flood season. They will be anchored sufficiently to ensure that an unplanned high flow release from the dam will not cause them to release from their anchorage and create a litter problem.

A seep well may be constructed outside the active low-flow channel to provide construction "make-up" water for all construction activities. A backhoe may be used to excavate and backfill soils at the seep well site. The well may consist of large diameter, perforated pipe placed vertically in the soil to a depth below the groundwater level. The annular space around the pipe will be filled with large aggregate to promote groundwater flow to the well.

Dewatering Activities

Should dewatering be required for construction at the site, the dewatering discharge will be contained in a tank or onsite containment/infiltration basin. In the event that an infiltration basin is used, discharge to the basin will be limited to water/groundwater only and will not be contaminated with deleterious construction byproducts.

All material and water required for drilling and installing the bent and abutments will be contained and disposed of off-site by the contractor at an approved and appropriate disposal site. The specifications will instruct the contractor that no cement fines, drilling fluids or contaminated water will be allowed to enter the ground or stream. The containment and disposal system has not been determined, since equipment to do this type of work varies from contractor to contractor.

Pier Construction

The bent will be a single 3.5-foot by 7-foot column supported by a reinforced concrete spread footing. The bent has a small "footprint," impacts the least amount of area, and is relatively quick to install. It is estimated that a single working platform with an area 24 feet-wide by 40 feet-long (960 ft^2) will be needed for equipment setup and access for bent construction. Dump trucks may be used to transport material for construction of platform. Bent construction will be done using standard equipment and procedures (contractor's choice) based on type of equipment available. The equipment may be a track dozer and a drill rig. Abutments and wing walls will be reinforced concrete and/or reinforced earth structures.

Traffic Control / Detour

Traffic will be maintained on the existing bridge and roadway alignment as the new bridge is constructed. Single lane closures and staged construction on Steel Bridge Road are anticipated to complete the construction of the approach roadway at the east side of the bridge. A minimum of one lane of traffic on Steel Bridge Road will be accommodated through the construction site during hours of peak use.

Bridge Demolition

The existing bridge will remain open to traffic and provide access for homeowners and construction equipment and personnel during construction. Under Alternative 1, the existing bridge would be removed in a manner similar with what was previously discussed for the Proposed Action.

Contractor Staging and Storage Areas

The existing bridge will provide primary site access. Contractor staging areas are expected to be available within the temporary easement areas. The temporary construction easement areas are shown in **Figure 2-22**. The contractor will

be required to place lath, flagging or other suitable markers at the edge of the temporary construction easements to show workmen the limits within which they must stay. The primary contractor staging area may be located within the Biggers Road ESL.

Air Pollution and Dust Control

Efforts will be made to minimize air pollution. The BOR specifications require that the contractor comply with all applicable air pollution control rules, regulations, ordinances, and statutes. Contract documents will specify that the contractor will be responsible to limit dust by watering construction site areas used by trucks and vehicles.

Fill Import and Export

Embankment material is typically a well-graded mixture of clayey sand (SC), sandy lean clay (CL), lean clay (CL), silt (ML), or silty sand (SM). Embankment material gradation typically has a minimum of 20 percent by dry weight, of soil particles passing a No. 200 United States Standard sieve, with a maximum particle size of 4 inches in maximum dimension. The material shall be obtained from on-site excavation or other approved sources and will be free from chemical contamination, vegetation, roots, trash, debris, or other unsatisfactory material. All lumps, clods, and oversize particles shall be removed.

When rip-rap for slope protection is required, the rock used for rip-rap shall be hard, dense, and durable. Either quarried rock or boulders may be used for rip-rap. Since no riprap is available onsite, all material used for slope protection will be imported. The rock in rip-rap shall be reasonably well graded from the maximum size down to the minimum size as previously shown in **Table 2-5**, Rock sizes and riprap thickness.

An estimated 1300 cubic yards of embankment material will be required for embankment and structural backfill at the Biggers Road Bridge site. This material will be hauled from an approved borrow source. An estimated 450 cubic yards of rip-rap will be required for slope protection and abutment protection. Slope protection will be placed adjacent to each abutment.

Water Pollution Prevention

The contractor shall also implement the same water pollution control measures that were previously identified for the Proposed Action.

Utility Relocation

Since no utilities will be impacted under this proposal, no relocation will be necessary.

Tentative Schedule

Construction is anticipated to begin in the fall 2003 with installation of access routes, temporary crossing of side-channel, staging areas, mid-channel bar work platform, right abutment engineered fill-slopes and modification of existing bridge alignment. Subsequent construction of the left abutment, bent structure, bridge superstructure, bridge decking, approach roadways, partial fine-grading and associated revegetation will occur prior to the following spring. Finally, removal of the existing bridge and foundations, construction of remaining areas of fine-grading and associated revegetation will occur during the following summer. Total construction time (not including demolition in subsequent construction season) is anticipated to be approximately 135 days. In-river work for each element of this project is anticipated as follows: 10 days on the right abutment (5 days in 2003 and 5 days in 2004), 7 days on the side

channel crossing installation and removal (5 days in 2003, 2 days in 2004). Demolition and clean up is projected to require about 50 days (including approximately 14 days of in-water pier removal).

Construction associated with this Project cannot begin until the environmental document has been adopted by the BOR, the BLM, and the County; preparation of final design, plans, specifications, and cost estimates; acquisition of ROW; acquisition of permits; and design approvals from state and federal agencies.

The project schedule is based on a Contract Award during summer/fall 2003. Construction of the bridge abutments, bent, superstructure, decking and roadway approaches, are anticipated to occur in the fall/winter seasons. Demolition of the existing bridge will occur the following summer. Total construction time (not including demolition in subsequent construction season) is anticipated to be approximately 135 days. Demolition and removal of the old bridge will require an additional 50 days (including 20 days of in-water work to remove pier and left bank abutment).

2.5 Alternatives Considered But Eliminated from Further Evaluation

In addition to the input provided in response to the scoping process and early consultation with affected parties, a Value Engineering (VE) Study was held the week of June 24, 2002 to consider structure alternatives. The VE team identified more than 50 ideas for further consideration and development in their initial effort. Subsequent investigation resulted in several alternatives that were subjected to the secondary screening criteria. This section provides a short description the alternatives considered but eliminated from further evaluation.

2.5.1 Salt Flat

Retrofit Alternative

During the Conceptual Design phase of this project a retrofit alternative was considered. This alternative consisted of raising and retrofitting the existing single lane railroad flatcar bridge. This alternative was eliminated due to the questionable ability of the present railroad bridges to meet current design criteria (e.g., AASHTO guidelines), and the higher cost. An additional consideration was that raising and retrofitting the existing bridge will take longer and temporary bridges to provide access are required.

Cast-in-Place Alternative

The VE team alternative consisted of a 280-foot-long, four-span, cast-in-place, post-tensioned concrete box girder structure with reinforced concrete abutments and bents founded on drilled shafts. This alternative was located downstream of the existing bridge and required a slightly steeper approach roadway profile than the Proposed Action. In addition, this alternative required substantial work within the active low-flow channel of the Trinity River. Two additional bents were required, in addition to the false work and formwork required for a cast-in-place structure.

Construction of the bent in the active low-flow channel would require temporary access to the bent location within the channel and might require use of a cofferdam. Costs for construction access or cofferdam construction were not determined, and therefore not included in the estimated construction cost. Overall, it was agreed that this alternative would require a longer and more pronounced disturbance of the active low-flow channel and anadromous fishery resources.

Since this alternative requires two additional bents, takes longer to construct, increases impacts to anadromous fisheries, and costs as much or more than the proposed bridge, it was eliminated from further evaluation.

Temporary Access Alternatives

The need to provide temporary access to the Salt Flat residents as part of the Trinity River Bridges Project was highlighted during the scoping process. As a result, representatives of the Lead Agencies identified and evaluated four temporary overland access alternatives in a memorandum dated July 12, 2002 (included in **Appendix K**). After consideration of the aforementioned routes, the review team agreed that these routes would not meet the primary objective outlined in **Chapter 1.6**. The requirement to provide reasonable and safe temporary and/or long-term access to the residents of Salt Flat may be difficult to achieve.

The ability to provide access to passenger vehicles, and service trucks (UPS, Fed Ex, propane delivery) on a daily basis for an extended period of time was a factor in this evaluation. Furthermore, the review team concurred that the effects associated with these routes may be prohibitive in terms of soil types, slope stability, economics, natural resources and human values. The review team concluded that further consideration and evaluation of these routes was unreasonable and infeasible at this time.

2.5.2 Bucktail

Double Concrete Box Alternative

During the Conceptual Design phase of this project, construction of a double box culvert and raised right approach roadway was considered. This alternative was eliminated due to the extended construction period and the higher costs. The impacts to jurisdictional wetlands (short-term, long-term) were a factor in this evaluation.

Retrofit Alternative

The VE team alternative consisted of raising the existing bridge 2.7 feet, installing drilled shafts to support the raised bridge, raising Browns Mountain Road and eliminating the 10-foot by 10-foot concrete box culvert. The work would involve cutting the existing superstructure away from the substructure, installing temporary struts to support the abutments, jacking up the superstructure, drilling and casting drilled shafts, and forming and casting new abutment support walls. A temporary bridge would be required to provide access around the existing bridge site. All of this work would be near and over the low-flow active channel. In contrast, the Proposed Action does not require any work near the low-flow active channel. Overall, it was agreed that this alternative would require a longer and more pronounced disturbance of the low-flow active channel and anadromous fishery resources.

Since this alternative requires raising and closing the existing bridge, providing alternative short-term access, extended construction period, impacts to anadromous fisheries, and costs more than the Proposed Action, it was eliminated from further evaluation.

2.5.3 Poker Bar

Retrofit Alternative

During the Conceptual Design phase of this project a retrofit alternative was considered. This alternative consisted of raising and retrofitting the existing railroad flatcar bridge. This alternative was eliminated due to the questionable ability of the present railroad bridges to meet current design criteria (e.g., AASHTO guidelines), and the higher cost. An additional consideration was that raising and retrofitting the existing bridge will take longer and temporary bridges to provide access are required.

Cast-in-Place Alternative

The VE team alternative consisted of two separate spans, 110 feet long over the left channel and 80 feet long over the right channel. These two bridges consisted of cast-in-place post-tensioned concrete box girder structure with reinforced concrete abutments founded on drilled shafts. This alternative was located downstream of the existing bridge and required a slightly higher approach roadway profile than the proposed bridge. This alternative also required false work and formwork for cast-in-place construction.

Overall, it was agreed that this alternative would require a longer and more pronounced disturbance of the low-flow active channel and anadromous fishery resources. Since this alternative takes longer to construct, increases impacts to anadromous fisheries, and costs as much or more than the proposed bridge, it was eliminated from further evaluation.

2.5.4 Biggers Road

Retrofit Alternative

During the Conceptual Design phase of this project a retrofit alternative was considered. This alternative consisted of raising and retrofitting the existing single lane railroad flatcar bridge. This alternative was eliminated due to the questionable ability of the present railroad bridges to meet current design criteria (e.g., AASHTO guidelines), and the higher cost. An additional consideration was that raising and retrofitting the existing bridge will take longer and temporary bridges to provide access are required.

Cast-in-Place Alternative

The VE team alternative consisted of a 232-foot-long, three-span, cast-in-place, post-tensioned concrete box girder structure with reinforced concrete abutments and bents founded on concrete footings and circular columns. This alternative, located 137 feet upstream of the existing bridge, required a slightly higher approach roadway profile than the proposed bridge. In addition, the alternative required substantial work within the low–flow active channel of the Trinity River. The bents are supported on concrete footings. This alternative also requires false work and formwork for cast-in-place construction.

Construction of the footing for bent 1 in the low-flow active channel would require construction access to the bent location within the low-flow active channel and might require use of a cofferdam. Costs for construction access or cofferdam construction were not determined, and therefore not included in the estimated construction cost. Overall, it was determined that this alternative would require a longer and more pronounced disturbance of the low-flow active channel and anadromous fishery resources.

Since this alternative requires footings for the bents, takes longer to construct, increases impacts to anadromous fisheries, and costs as much or more than the proposed bridge, it was eliminated from further evaluation.

SECTION 3.1

Introduction

Chapter 3

Affected Environment and Environmental Consequences

3.1 Introduction

Chapter 3 describes the affected environment and the environmental consequences of implementing the various alternatives described in Chapter 2. Issues discussed include: land use; the geomorphic environment; water resources; water quality; fishery resources; vegetation, wildlife, and wetlands; recreation; socioeconomics, population, and housing; tribal trust; cultural resources; air quality; environmental justice; aesthetics; hazards and hazardous materials; noise; public services and utilities/energy; and transportation/traffic circulation.

Each section includes a discussion of the affected environment (CEQA existing conditions), environmental consequences (CEQA environmental impacts), methodology, significance criteria (if applicable), and mitigation measures. Some sections address issues that are required to satisfy federal law (e.g., NEPA) but are not required to comply with CEQA. For example, CEQA compliance was not considered in the preparation of Sections 3.10 (Socioeconomics) and 3.13 (Environmental Justice), as CEQA generally does not require lead agencies to consider the purely economic or social effects of proposed projects. Sections are organized in the following manner:

Affected Environment (CEQA Existing Conditions)

These sections describe the existing regional and local conditions using the most current information available. This information is used as the environmental baseline for analyzing the significance of potential effects of the proposed action and the significance of the effects of project alternatives with respect to each specific resource area (See *CEQA Guidelines*, § 15125, subdivision (a) (CELSOC 2002)).

Environmental Consequences (CEQA Environmental Impacts)

As required by the *CEQA Guidelines* (CELSOC 2002), the impacts of a proposed project are defined as "changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is prepared" (Section 15126.2). For purposes of NEPA, the term "environmental consequences" is synonymous with the term "impact." The impacts of the project are identified and the level of significance is determined in the following sections of this chapter.

The following subsections are also presented in the Environmental Consequences Section for each issue area:

- **Methodology**: This subsection identifies the methods used to analyze impacts, as well as the key assumptions used in the analysis process. Sections that incorporate quantitative assessments reference complementary technical appendices within each of the relevant methodology subsections. Key assumptions used in qualitative analyses are also described for those sections that did not rely on quantitative tools.

- **Significance Criteria**: This subsection presents the criteria and thresholds used to identify potentially significant effects on the environment in accordance with California Public Resources Code Section 21082.2 and *CEQA Guidelines* (CELSOC 2002) Sections 15064 and 15065. "Thresholds" include guidance provided by the *CEQA Guidelines*, agency standards, legislative or regulatory requirements as applicable, and professional judgment. All impacts that do not exceed the stated significance criteria described for each section are assumed to be less than significant and are therefore not discussed in detail in the document (California Public Resources Code Section 21100 and CEQA *Guidelines* Section 15128).

- **Summary of Impacts Table**: At the beginning of the Impacts and Mitigation Measures subsection is a table that identifies all the impacts evaluated for that particular environmental issue area (i.e., Land Use, Fishery Resources, etc.). Included in this summary table are the various levels of significance (i.e., No Impact, Less than Significant, Significant) for each alternative associated with each of the four project sites (i.e., Salt Flat, Bucktail, Poker Bar, and Biggers Road), including the No-Action Alternative.

- **Impacts**: Impacts (environmental consequences) are presented separately for each of the four project sites (i.e., Salt Flat, Bucktail, Poker Bar, and Biggers Road). At the end of each impact statement heading, the impact significance determination (i.e., No Impact, Less than Significant, Significant) is provided for each alternative evaluated. Following the impact statement is the detailed impact analysis provided for each alternative being fully evaluated in the EA/EIR. In instances where the effects of one alternative are similar to another alternative, redundant impact analysis is not presented; rather a simple statement to the effect that the impacts are similar between the two alternatives is provided. An example of the impact analysis structure is provided below:

  Salt Flat Bridge

  Impact 3.2-1: Construction of the proposed Trinity River Bridges Project could temporarily disrupt existing land uses adjacent to the project site. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1 and Alternative 2.***

  No-Action Alternative

  Under the No-Action Alternative…

  Proposed Action (Replacement Downstream, Private Ownership)

  Construction and operation of the Proposed Action…

  Alternative 1 (Replacement Upstream, Private Ownership)

  Land use impacts associated with Alternative 1 are similar to the Proposed Action…

- **Mitigation**: Potentially feasible mitigation measures that would reduce significant impacts associated with each of the alternatives to less-than-significant levels are provided after each impact discussion. If warranted, separate mitigation measures are listed for each project alternative. In those instances where no feasible mitigation can be identified, such impacts are identified as significant and unavoidable. An alphanumeric coding system is used to present each mitigation measure. For example, Mitigation Measure SF-1 would correspond to the first impact statement listed under the Salt Flat impact discussion. Other abbreviations include: BT (Bucktail), PB (Poker Bar), and BR (Biggers Road). Following the mitigation measures is a subheading entitled "Significance after Mitigation" that identifies the level of significance following

implementation of the prescribed mitigation measures. In those instances where no mitigation measures were proposed because the impact was not significant, a "Not Applicable" statement follows this subheading. An example of the mitigation measures structure is provided below:

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: *N/A.*

Proposed Action and Alternative 1

SF-1a: The BOR shall clearly identify all...

Alternative 2

SF-1a: The BOR shall clearly identify all...

Significance after Mitigation: *Less than Significant.*

SECTION 3.2

Land Use

3.2 Land Use

This section addresses land use issues related to construction and operation of the Trinity River Bridges Project, including the project conformance with local and regional plans and policies. The following evaluation is based on review of local land use plans and policies, and field reconnaissance to identify potential sensitive receptors relative to the proposed project construction activities.

3.2.1 AFFECTED ENVIRONMENT/ENVIRONMENTAL SETTING

Regional Setting

Existing Land Uses

The Trinity River Basin is comprised of the majority of Trinity County and the easternmost portion of Humboldt County. The terrain is predominantly mountainous and forested, with little available farming area. Two scenic byways cross the County: Highway 299 and State Route 3. Lakes and rivers provide opportunities for fishing and boating. Most of the Hoopa Valley Indian Reservation is within the basin in Humboldt County. The largest town in the region is Weaverville, followed by Hoopa, Hayfork, and Lewiston. Land use within the Trinity River Basin is greatly influenced by the large amount of public, tribal, and private forest lands, much of which is used for timber production and other natural resource related uses. Private uses along the Trinity River are generally limited to scattered residential and commercial development. State Highway 299 is the primary travel corridor through Trinity County, connecting the Central Valley with the coastal communities of Humboldt County (**Figure 3.2-1**).

In 1998, 75.2 percent of all land in Trinity County was under federal jurisdiction. The majority of federal lands are governed by the USFS, which owned 1,463,870 acres in 1998. Other major federal land holdings are under the BLM (78,928 acres) and the BOR (268 acres) jurisdiction. Thus, federal lands account for 1,463,870 acres out of the total 2,052,980 acres in Trinity County (Center for Economic Development [CED] 2001).

With a population totaling approximately 15,000, the Trinity River Basin is very lightly populated. Trinity County had a population of 13,022 in 2000. Throughout the watershed, residential, commercial, and industrial uses tend to be concentrated on relatively flat areas near the Trinity River or its tributaries, as typified by the population centers of Weaverville, Hayfork, Lewiston, Willow Creek, and Hoopa. Together, these communities house two-thirds of the basin's population.

The development potential of most of the land in the watershed is restricted by topography, public ownership, Timber Production Zone zoning (which applies to most private land), and by the County and tribal planning policies that guide development towards already developed areas and discourage development on resource lands. Small communities like Douglas City and Junction City exist along State Highway 299 on level terrain adjacent to the Trinity River. This development has been primarily residential in nature, typified by scattered single-family residences and mobile homes. Much of this residential development has encroached on the river's floodplain and some of its tributaries.

Regional Planning Efforts

Figure 3.2-2 depicts general planning area boundaries in the project vicinity. The BLM's Redding area office manages public lands in and adjacent to the project area. These lands are managed for multiple uses in conformance with the Redding Resource Management Plan (RMP) and ROD (BLM 1993). The RMP for the Trinity River Area

consists of resource condition objectives, land-use allocations, and management actions, as described later in this section (Relevant Plans and Policies).

The County has outlined land-use categories and land-use designations in the Land Use Element of the General Plan. The land use categories and designations are intended to be flexible in nature. They are not zoning districts; however, zoning districts must be consistent with these land use designations. The land use categories are Community Development, Village, and Natural Resource. These broad general categories were developed to identify community development areas as opposed to resource lands. **Table 3.2-1** describes these categories and their associated land-use designations.

TABLE 3.2-1
TRINITY COUNTY GENERAL PLAN LAND USE CATEGORIES AND ASSOCIATED LAND-USE DESIGNATIONS

Category	Definition
Community Development (CD)	Those areas in Trinity County that can be described as viable communities. Special efforts are made to positively encourage new development to locate in CD areas, as services are readily available and can be provided more cheaply and conveniently. Typically, CD areas incorporate a number of varied land uses all of which are critical to the economic well-being and general quality of life for its residents. Land-Use Designations applicable to CD areas include Community Residential; Commercial; Industrial; and Community Expansion.
Village (V)	Those areas that can be described as a small group of residences and/or commercial enterprises. These areas are recognizable as a definite place, but cannot reasonably be called a community with a wide variety of land uses. V areas are typically a minimum support center for a large rural area and/or a travel stop for tourists or other travelers. Land-Use Designations applicable to V areas include Village.
Natural Resource (NR)	Recreational developments such as campgrounds, recreational vehicle parks, marinas, boat launching ramps, picnic area, resorts, and small businesses serving recreationists should be permitted in NR areas, to the extent that they do not damage sensitive environmental resources or commercial value. Land-Use Designations applicable to this category include Open Space, Resource Land, Agriculture, and Rural Residential. Resorts that are otherwise consistent with Open Space, Resource, Agriculture, or Rural Residential will be allowed this designation. However, the theme of any new development in NR areas must emphasize and enhance the natural resource area in which they are located.

The project study area is generally located within Trinity County's Natural Resource Land Use Category.

10006 - Trinity River Bridge Replacement/Graphics/Fig_3.2-1.ai 03/25/03 VB

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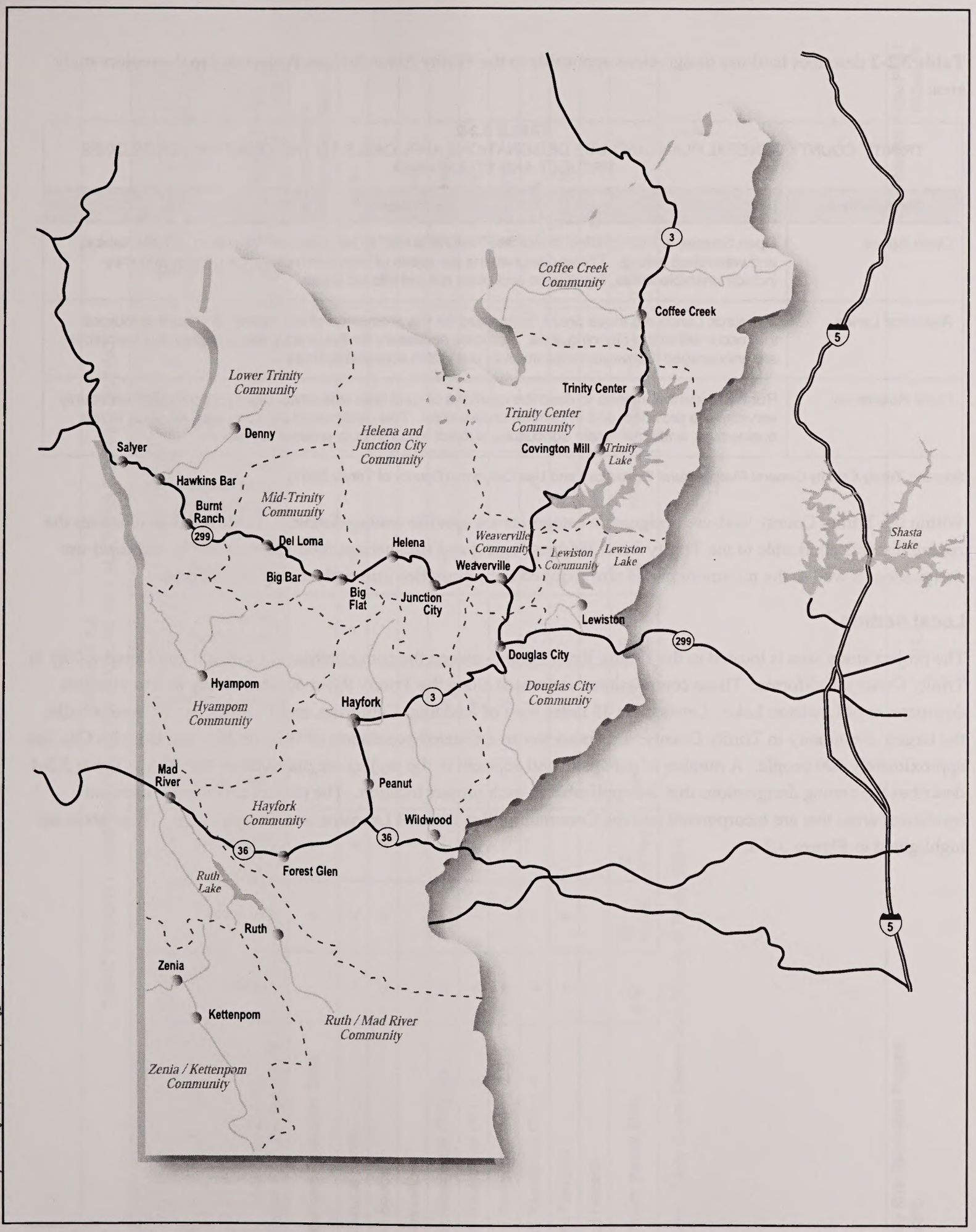
Figure 3.2-1
Trinity River Basin Land Ownership



10006 - Trinity River Bridge Replacement/Graphics/Fig_3.2-2.ai 03/24/03 VB

Figure 3.2-2
Planning Area Boundaries

Table 3.2-2 describes land-use designations applicable to the Trinity River Bridges Project and to the project study area:

TABLE 3.2-2
TRINITY COUNTY GENERAL PLAN LAND-USE DESIGNATIONS APPLICABLE TO THE TRINITY RIVER BRIDGES PROJECT AND STUDY AREA

Designation	Definition
Open Space	Open Spaces are designated to indicate "natural areas" to be protected for scenic, wildlife habitat, and watershed values. These designations are areas of important natural processes and may include unstable areas, floodplains and other natural hazard areas.
Resource Lands	Resource Lands are those areas designated for the production of the variety of natural resources that occur within the planning area. Activities necessary for the production of the various resources are encouraged if environmental impacts are within acceptable limits.
Rural Residential	Rural Residential intends to describe locations of rural type residential development. Minimal county services are provided, and in general undesirable. This designation also provides for small home businesses, and small-scale agriculture, subject to controls to prevent nuisances.

Source: Trinity County General Plan; Natural Resource Land Use Category (County of Trinity 2001)

Within the Trinity County land-use designation categories are specific zoning districts. **Table 3.2-3** summarizes the zoning districts applicable to the Trinity River Bridges Project and summarizes their applicability to each land-use designation as well as the minimum parcel size required to be classified into each zoning district type.

Local Setting

The project study area is located in the Trinity River Basin between the communities of Lewiston and Douglas City in Trinity County, California. These communities are located along the Trinity River approximately five to 10 miles downstream of Lewiston Lake. Lewiston is 35 miles west of Redding, California, and 15 miles east of Weaverville, the largest community in Trinity County. Lewiston has an estimated population of 1000 people, and Douglas City has approximately 500 people. A number of parcels in and adjacent to the project are managed by the BLM. **Table 3.2-4** describes the zoning designations that are applicable to each project location. The project encompasses several residential areas that are incorporated into the Community Plan areas of Lewiston and Douglas City. These areas are highlighted in **Figure 3.2-2**.

TABLE 3.2.3
TRINITY COUNTY GENERAL PLAN DESIGNATIONS AND ALLOWABLE ZONING DISTRICTS

Allowable Zones General Plan Designations	Village	Resource	Agriculture	Open Space / Conservation	Rural Residential	Community Expansion	Community Development	Single Family Residential (Med.)	Single Family Residential (High)	Commercial	Public Facilities	Minimum Parcel Size
Timberland Production Zone		x	x	x								160 acres unless created before 1988
Agricultural Forest	x	x	x	x		x	x					10 acres
Open Space	x	x	x	x							x	
Conservation				x								10 acres
Rural Residential (RR) -10	x				x		x					10 acres
Rural Residential (RR) -5	x				x		x					5 acres
Rural Residential (RR) -2.5	x				x		x					2.5 acres
Rural Residential (RR) -1	x				x		x	x	x			1 acre
Public Facilities	x	x					x			x	x	2,000 ft^2
Flood Hazard				x								N/a
Minimum Parcel Size	5 M^2	20 acres	10 acres	n/a	1 acre	10 acres	5 M^2	10 M^2	10 M^2	½ acre	2 M^2	

Source: Trinity County General Plan (County of Trinity, 2001)

TABLE 3.2-4 TRINITY COUNTY ZONING DESIGNATIONS AND LAND USE ZONES FOR PROJECT AREAS				
Project Locations	**Salt Flat**	**Bucktail**	**Poker Bar**	**Biggers Road**
Timberland Production	X	X	X	
Ag. Forest	X			
Open Space	X		X	X
RR-10 acres				
RR-5 acres	X		X	X
RR-2.5 acres	X			
RR-1 acres		X		
Public Facility		X		
Flood Hazard	X	X	X	X
Scenic Conservation	X	X	X	X

Salt Flat

Existing Land Uses

Salt Flat is incorporated into the Lewiston Community Plan area. At Salt Flat, residential areas are located on either side of Goose Ranch Road and on both sides of the Trinity River. The residents on the right side (west) of the Trinity River rely on the privately owned Salt Flat Road and Bridge to access their property.

Planning Designations

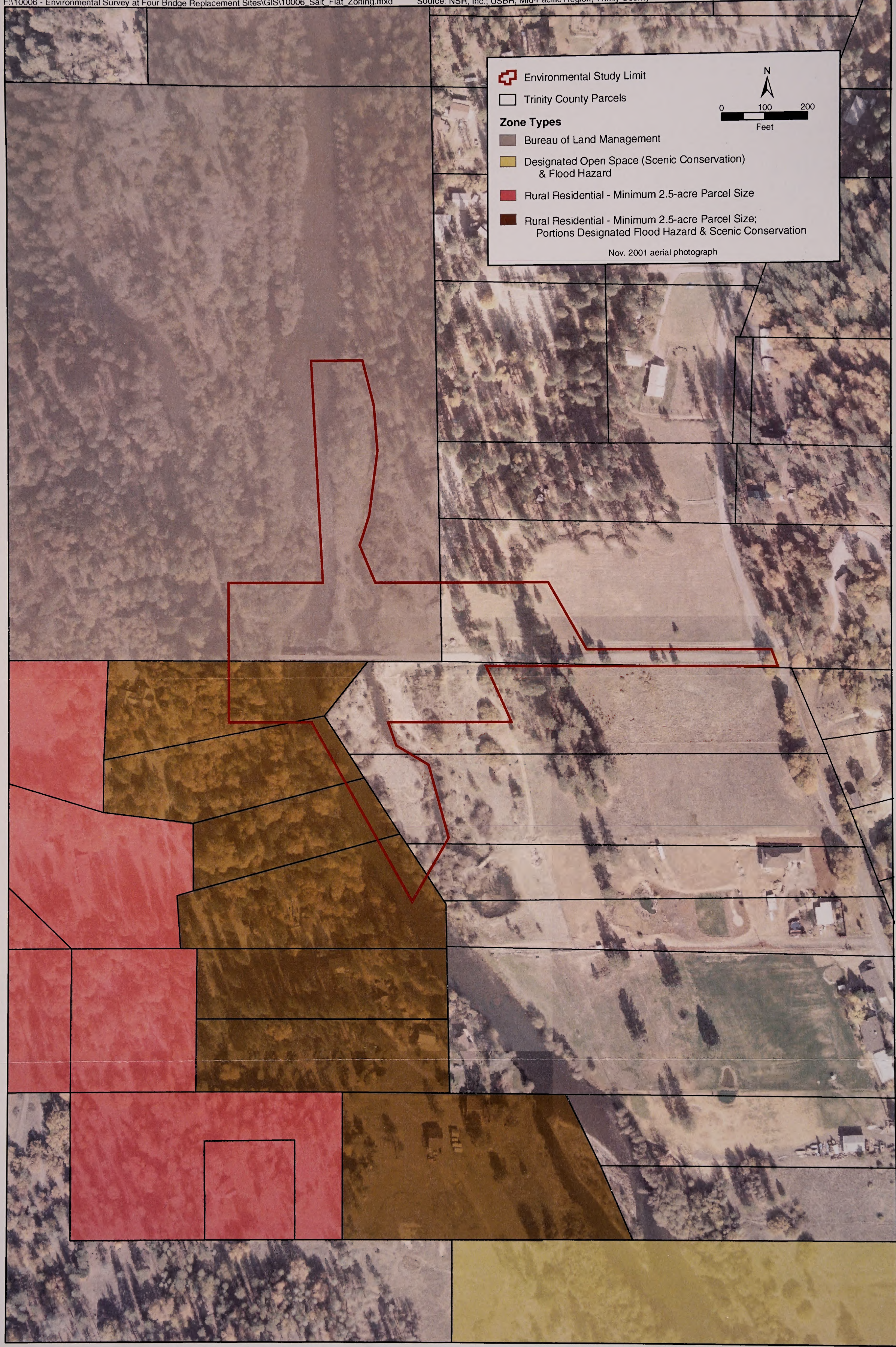
The parcels at Salt Flat Bridge are primarily zoned with a Rural Residential designation and a minimum parcel size ranging from 2.5 to five acres (**Figure 3.2-3a**). The portions of parcels located in the 100 year floodplain of the river fall into the Flood Hazard and Scenic Conservation Overlay zoning districts.

Bucktail

Existing Land Uses

The Bucktail residential area is located on the right side (west) of the Trinity River and is accessed by the County-owned Browns Mountain Road and Bucktail Bridge. Browns Mountain Road and the Bucktail Bridge are managed by Trinity County. The Lewiston Community Plan identifies the Bucktail site as a major public river access point. Designated parking is available northeast and southeast of the bridge, public access points are located northeast and southwest of the bridge, and sanitary facilities are available southeast of the bridge.

F:\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Salt_Flat_Zoning.mxd Source: NSR, Inc.; USBR, Mid-Pacific Region; Trinity County 03-31-03 tkoehler



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Trinity River Bridges Project

Figure 3.2-3a
Salt Flat Bridge Parcel Zoning

Planning Designations

The parcels served by Bucktail Bridge are primarily zoned with a Rural Residential designation and a minimum parcel size of one acre (**Figure 3.2-3b**). A Mobile Home Standard has been applied to all parcels with a Rural Residential designation and the portions of parcels located in the 100 year floodplain of the river that fall into the Flood Hazard and Scenic Conservation Overlay zoning districts. The bridge provides access to approximately 500 acres of privately owned timberland that is zoned for Timberland Production. The public lands located within the area are primarily managed by the BLM.

Poker Bar

Existing Land Uses

The Poker Bar subdivision is located midway between Lewiston and Douglas City, on either side of the Poker Bar Bridge. This residential area is served by Poker Bar Road north of Highway 299. This residential area is incorporated into the Douglas City Community Plan. Immediately south of the Poker Bar Bridge, the Douglas City Rural Fire District maintains a volunteer fire station. This station provides service to residents on both sides of the Trinity River. Poker Bar Bridge is privately owned.

Planning Designations

Poker Bar Bridge provides access to over 75 parcels, which are primarily zoned as Rural Residential, with a minimum parcel size of five acres. A Mobile Home Standard has been applied to all parcels with a Rural Residential designation (**Figure 3.2-3c**). Many portions of parcels located in the 100 year floodplain of the river fall into the Flood Hazard and Scenic Conservation Overlay zoning districts and are generally less than three acres in size. The bridge provides access to approximately 400 acres of privately owned timberland (Sierra Pacific Industries) as well as several large areas of publicly managed lands (BLM).

Biggers Road

Existing Land Uses

The Biggers Road Bridge provides access for several residential properties across the river from Steel Bridge Road. Trinity County maintains Steel Bridge Road as a primary access route into this area. Access is provided for residential and recreational uses adjacent to the Trinity River. Biggers Road and Bridge are privately owned.

Planning Designations

The parcels served by Biggers Road Bridge are primarily zoned Rural Residential, with a minimum parcel size of five acres (**Figure 3.2-3d**). A portion of parcels located in the 100 year floodplain of the river fall into the Flood Hazard and Scenic Conservation Overlay zoning districts.

Proposed Land Uses

In general, all parcels served by the four bridges have been subdivided to their fullest extent possible under existing zoning designations; therefore, future rural residential development in the bridge vicinities is unlikely. The zoning designations at all four bridges are largely residential, with a minimum parcel size ranging from one to 10 acres. Located directly adjacent to the river, many portions of parcels located in the 100 year floodplain of the river fall into the Flood Hazard and Scenic Conservation Overlay zoning districts, making further development of these areas difficult. The residential areas at all four bridges have generally been subdivided to their fullest extent, and with

zoning designations of a minimum of five acres or less, have no potential for further development. Several parcels, zoned for residential use, are currently vacant and the potential for development of a single-family residence on such parcels does exist. There are several large private timberland holdings, and the potential for Salt Flat Bridge, Poker Bar Bridge, or Bucktail Bridge to be used as an access route for logging trucks does exist. The BLM manages most of the public land in the area, consistent with the WSRA and their adopted land management plan for the area. The parcels served by the bridges generally have no further potential for development.

Relevant Plans and Policies

Bureau of Land Management Redding Resource Management Plan and Record of Decision (1993)

The BLM RMP for the Trinity River Area (BLM 1993) consists of resource condition objectives, land-use allocations, and management actions. Resource condition objectives are the goals established for the decision area and are listed in descending priority order. Land-use allocations prescribe general management categories (e.g., visual resources and recreation opportunity classes), specific limitations to full resource use (e.g., leasable mineral restrictions), or formal designations (e.g., Area of Critical Environmental Concern, wild and scenic river corridor, etc.) that are needed to meet the resource condition objectives and/or to comply with Federal law. Management actions are implementation measures that ensure that the resource condition objectives are met and that alert the public and the BLM to specific follow-up actions that are anticipated to implement the land-use management alternatives.

Resource Condition Objectives

1. Enhance recreation opportunities related to use of the Trinity River including mineral collection.
2. Maintain scenic quality along the river corridor.
3. Protect and enhance the anadromous fisheries of the Trinity River.
4. Interpret and protect key cultural and natural resources for the public including the Helena town site, Rush Creek, Montana Cabin, and Salt Flat.
5. Maintain the riparian habitat in Class I or Class II condition.

Land Use Allocations

1. Designate [public lands in the management area] as the corridor for this "Recreational" component of the National Wild and Scenic Rivers System.
2. Manage all public lands as Visual Resource Management (VRM) Class II.
3. Manage all public lands within the corridor as Roaded Natural or Semi-Primitive Motorized.
4. Withdraw specific cultural resources from mineral entry including Helena, Rush Creek, Ohio Flat, Salt Flat, and Montana Cabin; withdraw anadromous fisheries habitat improvements from mineral entry including Steiner Flat and Cemetery Hole.
5. Offer mineral material disposals only to enhance riparian vegetation, anadromous fisheries habitat, or when not in conflict with the long-term protection of natural values.

Management Actions

Continue implementation of recreational developments and monitoring prescribed in the existing management plan.

F:\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Bucktail_Zoning.mxd Source: NSR, Inc.; Trinity County; USBR, Mid-Pacific Region 03-29-03 tkoehler

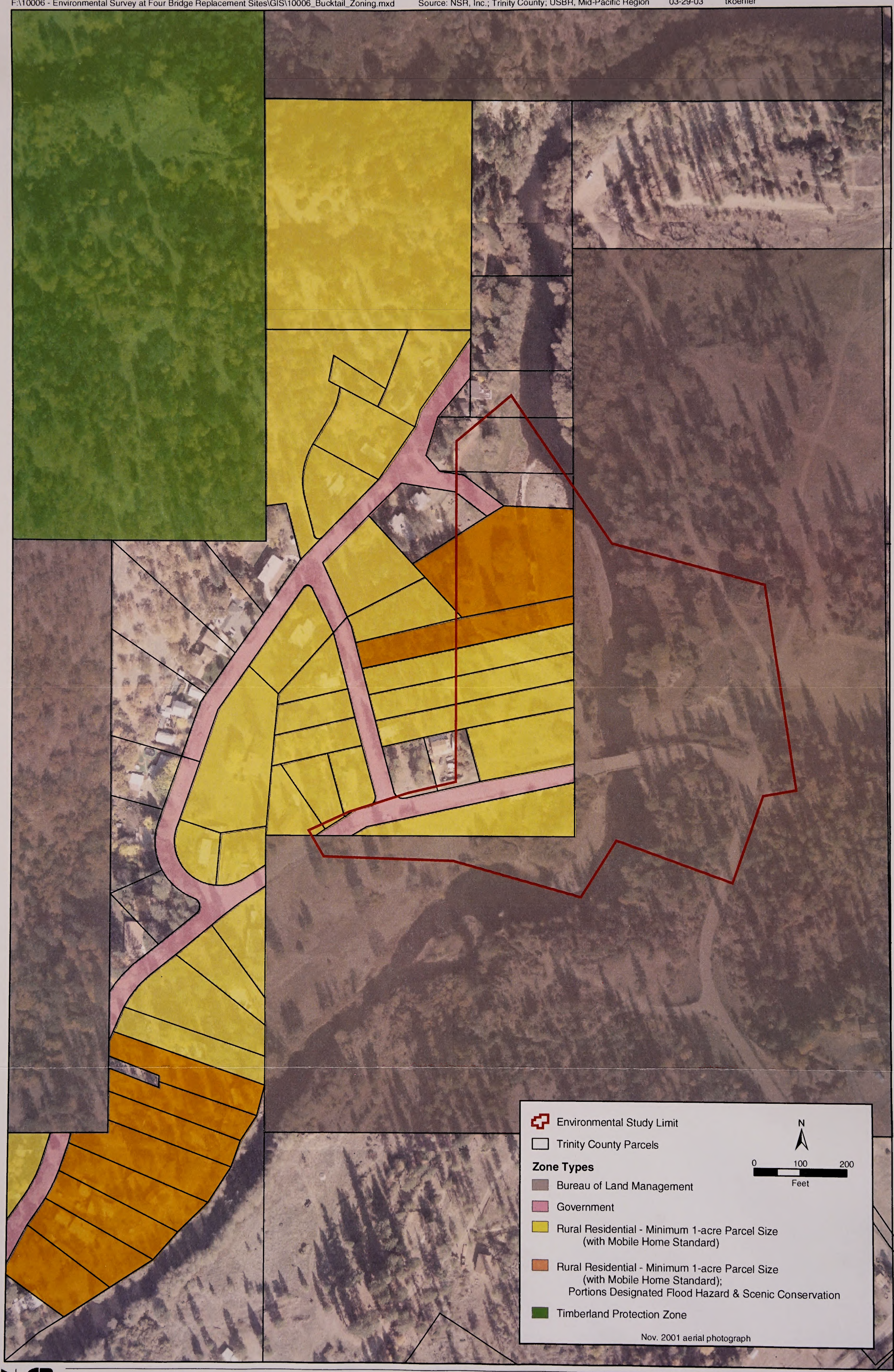

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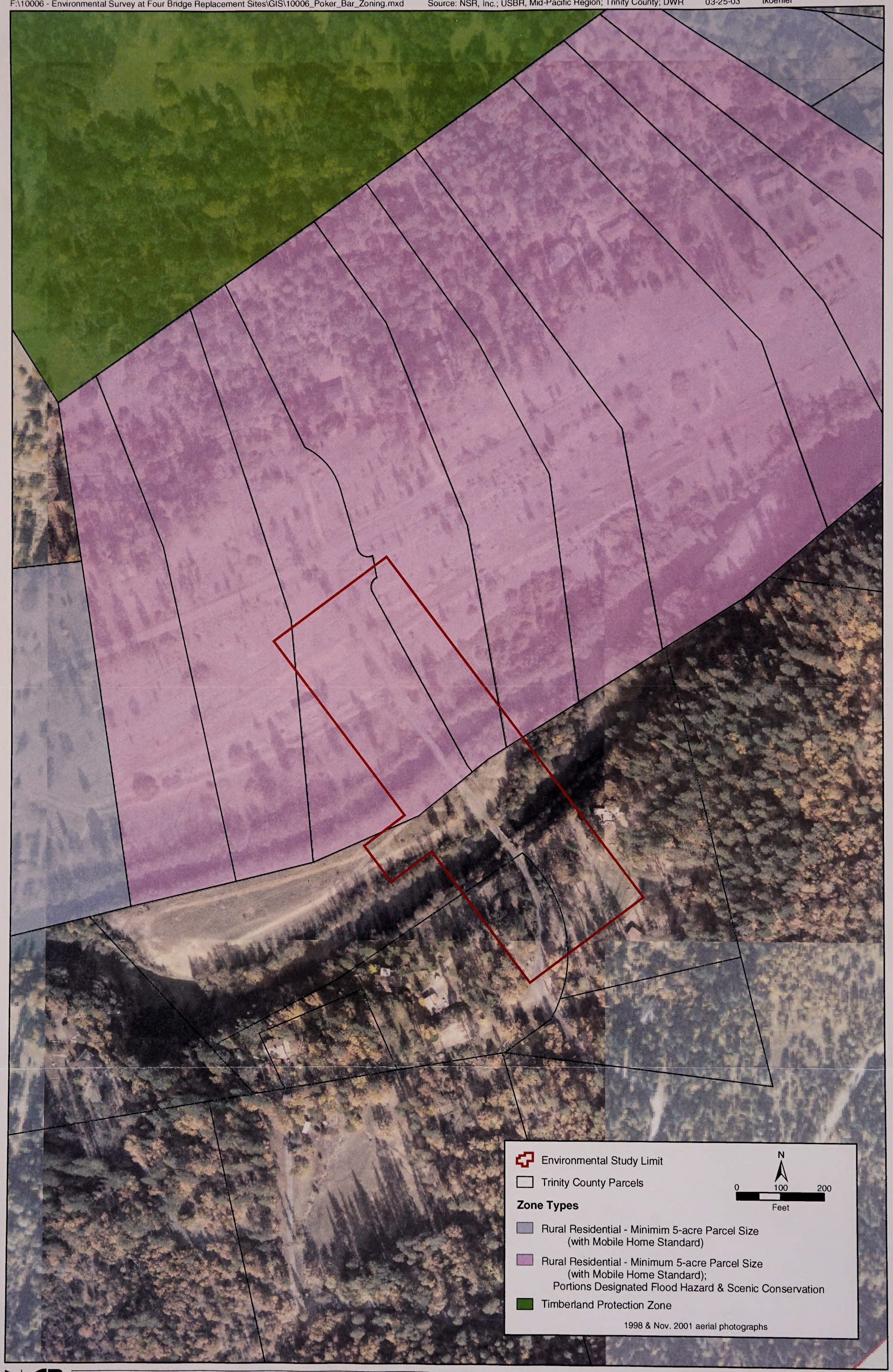
Figure 3.2-3b
Bucktail Bridge Parcel Zoning

F:\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Poker_Bar_Zoning.mxd Source: NSR, Inc.; USBR, Mid-Pacific Region; Trinity County; DWR 03-25-03 tkoehler



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Trinity River Bridges Project

Figure 3.2-3c
Poker Bar Bridges Parcel Zoning

F:\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Biggers_Zoning.mxd Source: NSR, Inc.; Trinity County; DWR 1-02-03 tkoehler

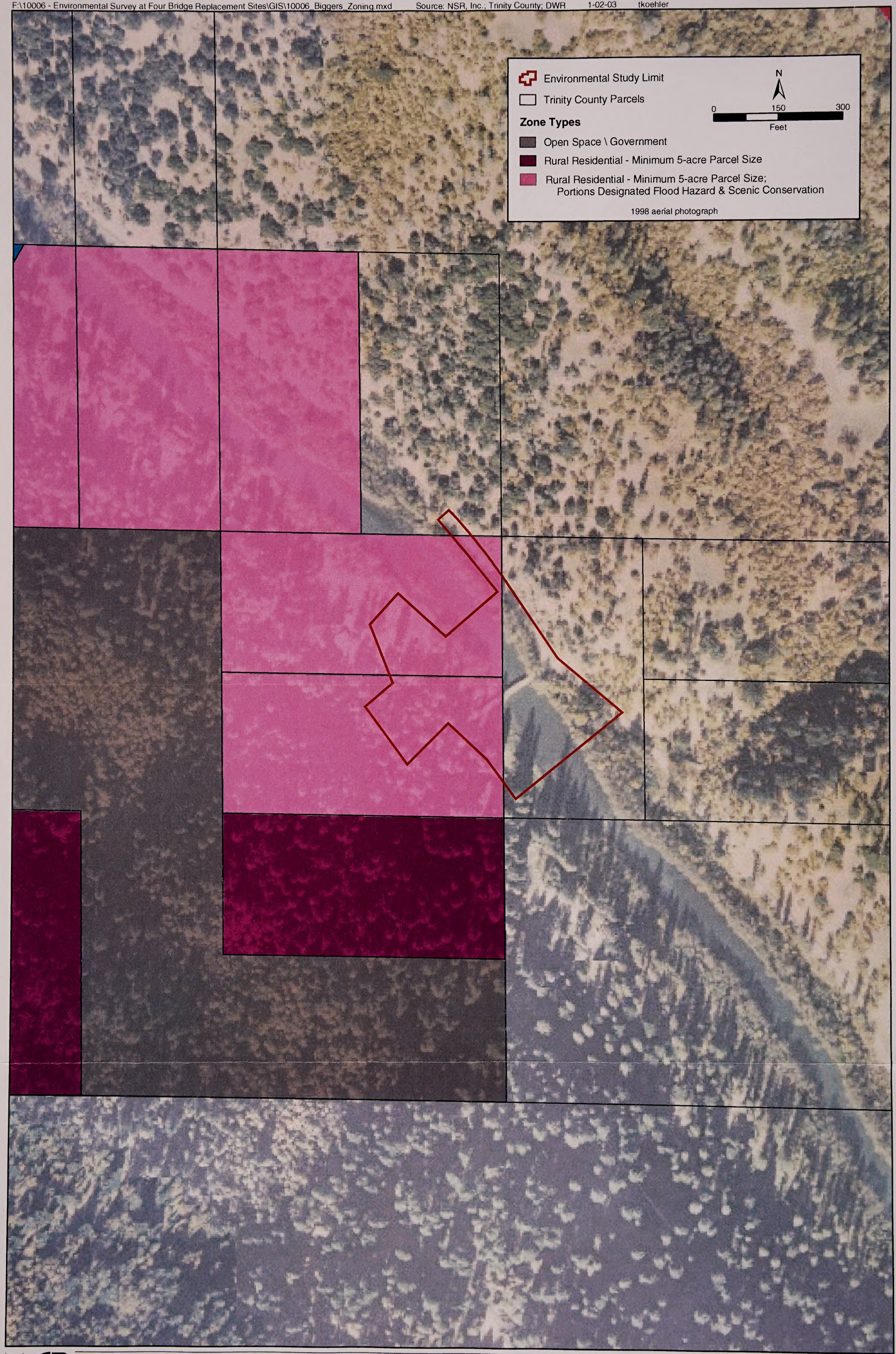

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Figure 3.2-3d
Biggers Road Parcel Zoning

Project Consistency with the BLM Resource Management Plan

The following table outlines the consistency of the proposed action with the BLM RMP.

TABLE 3.2-5
CONSISTENCY OF PROPOSED ACTION WITH THE BLM REDDING RESOURCE MANAGEMENT PLAN AND RECORD OF DECISION

Objectives	Assessment of Consistency
1. Enhance recreation opportunities related to use of the Trinity River including mineral collection.	The proposed project is designed to protect existing recreation opportunities along the Trinity River.
2. Maintain scenic quality along the river corridor.	The proposed project will not add any new, visually detracting features to the river corridor.
3. Protect and enhance the anadromous fisheries of the Trinity River.	The proposed project is designed to protect and enhance the anadromous fisheries of the Trinity River (see Fisheries Section).
4. Interpret and protect key cultural and natural resources for the public including the Helena town site, Rush Creek, Montana Cabin, and Salt Flat.	The proposed project is designed to protect existing cultural and natural resources (see Section 3.7, Vegetation, Wildlife, and Wetlands and Section 3.11, Cultural Resources).
5. Maintain the riparian habitat in Class I or Class II condition.	Riparian habitat removed as a part of the proposed project will be restored at a 3:1 ratio (see Section 3.7, Vegetation, Wildlife, and Wetlands).

3.2.2 REGULATORY FRAMEWORK

Trinity County Fire Safe Ordinance (1992)

Trinity County's Fire Safe Ordinance (#1162) constitutes the basic wildland fire protection development standards of the County. The ordinance is designed to provide basic emergency access and perimeter wildfire protection measures to all construction within the County approved after January 1, 1992, including (but not limited to) road construction where a road does not currently exist, or extension of an existing road. The County is responsible for providing California Department of Forestry (CDF) with notice of applications for building permits and use permits for construction or development within the County, including maps. CDF reviews these documents and makes fire protection recommendations. Applicable sections of this Ordinance become a condition of approval of any applicable construction, development permit, or map. Article 2 of this Ordinance defines the Emergency Access requirements for all new road construction, including road width, roadway turnarounds and roadway structures.

Trinity County General Plan Goals and Objectives

The Trinity County General Plan contains goals and policies designed to guide the future physical development of the county, based on current conditions. The general plan contains all the state-required elements, including community development and design, transportation, natural resources, health and safety, noise, housing, recreation, economic development, public facilities and services, and air quality. The following goals and policies, relative to land use issues associated with the project study area, were taken from the applicable elements of the general plan (Trinity County 2001 [County 2001]). This includes the Lewiston Community Plan (County 1986) and the Douglas City Plan (County 1987).

County-Wide Goals and Objectives

Cultural

To retain the rural character of Trinity County:

- By encouraging uses that fit with the land
- By considering the "rights" of the individual when making decisions as well as the "rights" of the community
- By seeking information and cooperation from state and federal agencies within Trinity County

Environmental

To strive to conserve those resources of the County that are important to its character and economic well-being:

- By assuring that developments occurring on these lands are compatible with the resources
- By strongly supporting the County as "lead agency" or as an integral participant in any state or federal project within the County so that all agencies are made aware of local desires and all plans are coordinated
- By utilizing a sound resource-related planning process in decision-making
- By protecting not only rare and endangered species, but also required habitat for more plentiful species

Land Use Designation

Land Use Designations are broad general descriptions of what type of land use may occur in a specific area. Three general categories have been identified. They are CD, V, and NR. The County adopted Plans for the communities of Lewiston and Douglas City in 1996 and 1987, respectively. Several goals are applicable to this project.

Goal I. Develop a land use pattern that implements other elements of the Community Plan.

Goal III. To guide development in such a manner that an acceptable balance is achieved between the cost for public facilities and services and revenues or improvements required of new developments.

Goal IV. To encourage development which is consistent with the land's natural carrying capacity.

Safety Element

The following goals and objectives and policies are applicable to this project.

Structural and Wildland Fire Safety Goal

Reduce fire hazards in wildland, wildland/interface and developed areas.

Accessibility

- Roads shall be constructed to provide adequate width, grade and turn-around space for emergency vehicles by complying with appropriate federal, state and local adopted standards. Construction of roads shall protect water quality, slope stability and threats to natural and cultural resources.
- Encourage owners of existing private roads to provide identification signage for emergency access purposes.

Lewiston Community Plan Goals and Objectives

This plan includes the area centered on the Trinity River from Lewiston Lake to slightly downstream of the confluence of Grass Valley Creek and the Trinity River. Project sites within the planning area include Salt Flat and Bucktail.

Parks and Recreation

Goal: To provide for access to the Trinity River in a manner which recognizes and respects the rights of existing development.

- Develop a River Access Plan that relies predominantly upon public lands for access to and along the Trinity River.
- Ensure that the proper level of services is provided at river access points.

Land Use

Goal: To encourage the retention and utilization of resource land for timber production, agricultural uses and mineral extraction.

- Encourage mineral extraction activities, especially gravel extraction uses within the Trinity River.

Douglas City Community Plan

This plan includes the area centered on the Trinity River from Grass Valley Creek to slightly downstream of Steiner Flat. Project sites within the planning area include Poker Bar and Biggers Road bridge sites.

Land Use

Goal: To encourage the retention and utilization of resource land for timber production, agricultural uses and mineral extraction.

- Encourage mineral extraction activities, especially gravel extraction uses within the Trinity River.

Project Consistency with the Trinity County General Plan and Community Plans

As described in Chapter 1, Introduction, the proposed Trinity Bridges Project would:

- Provide safe and reasonable year-round access to parcels of land served by the Salt Flat, Bucktail, Poker Bar and Biggers Road bridges across the Trinity River.
- Allow dam operators maximum flexibility to provide instream flow releases from Lewiston Dam adequate to meet the fishery and geomorphic flow needs for the mainstem Trinity River and to fulfill the Trinity River TMDL for sediment and restore the coldwater fishery beneficial use.

The following project objectives apply to the project's lead/responsible agencies for CEQA purposes:

- Minimize the threat to public safety and potential damage to property posed by the existing high likelihood of flooding
- Provide maximum flexibility for implementing a variety of potential Trinity River fishery flow alternatives, as well as other flow alternatives outside the ROD such as increasing dam releases during periods of high downstream tributary inflows

- Allow for high-efficiency sediment transport in the Trinity River to maximize the amount of sediment transported on a per acre-foot basis so that Trinity River can be removed from California's Clean Water Act Section 303(d) Impaired Waterbodies List, while minimizing the total amount of water necessary to transport sediment through the river system
- Provide maximum flexibility for operations of the TRD during periods of high runoff and flooding which could result in increased water in storage available for multiple beneficial uses (i.e., fisheries, recreation, water supply, water quality and power production)
- Provide alternative access on a short-term basis during project implementation
- Recovery of fish and wildlife resources that are listed as threatened and endangered

The following objectives apply to the projects responsible and trustee agencies, including the HVT, NCRWQCB, the SLC, the CDFG, and the SWRCB:

- Comply with the Water Code to ensure the highest reasonable quality of waters of the state and allocate those waters to achieve the optimum balance of beneficial uses
- Protect the public trust assets of the Trinity River watershed
- Protect, conserve, restore, and manage fish, wildlife, and native plant resources
- Comply with the Water Quality Control Plan for the Hoopa Valley Indian Reservation to preserve and enhance water quality on the Reservation, and to protect the beneficial uses of water.

These project objectives are consistent with the applicable general plan goals and policies summarized above.

3.2.3 Environmental Consequences/Impacts and Mitigation Measures

Methodology

The following section provides a brief overview of the analytic methodologies utilized in assessing potential impacts of the Trinity River Bridges Project on land uses. These methodologies included review for farmland presence, identification of potential Williamson Act contracts, planned land uses, zoning, established uses, neighboring areas, and existing site uses. Traffic impacts were assessed based on the potential contribution of bridge construction to traffic congestion on local roadways.

Significance Criteria

The impact analysis presented below evaluates potential project impacts on land uses as a result of construction and/or operation of the proposed Project. The following significance criteria have been developed based on guidance provided by *CEQA Guidelines* (Appendix G – Environmental Checklist / IS Form) (CELSOC 2002). Impacts to land uses would be significant if they:

- Result in land uses that are incompatible with existing and planned land uses adjacent to project facilities
- Conflict with any applicable land use plan, policy, ordinance, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect
- Disrupt or divide the physical arrangement of an established community

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use
- Conflict with existing zoning for agricultural use, or a Williamson Act contract
- Result in substantial nuisance effects on sensitive land uses that would disrupt use over an extended time period

Impacts and Mitigation Measures

Table 3.2-6 summarizes the potential land use impacts resulting from implementation of the Trinity River Bridges Project.

TABLE 3.2-6
SUMMARY OF LAND USE IMPACTS FROM THE PROPOSED TRINITY RIVER BRIDGES PROJECT

Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Alternative 2
1. Construction of the proposed Trinity River Bridges Project could temporarily disrupt existing land uses adjacent to the project site.	Salt Flat	NI	S	S	S
	Bucktail	NI	S	S	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
2. Future operation of the proposed Trinity River Bridges Project could disrupt existing land uses adjacent to the project site.	Salt Flat	NI	LS	LS	SU
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A
3. Construction of the proposed Trinity River Bridges Project would result in the conversion of a small portion of vacant land to a new facility.	Salt Flat	NI	LS	LS	LS
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A
4. Implementation of the proposed Trinity River Bridges Project may be inconsistent with the goals, policies, and objectives of the Trinity County General Plan, as well as the local community plans, policies, and ordinances.	Salt Flat	NI	LS	LS	LS
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A

Notes:
LS = Less than Significant S = Significant NI = No Impact SU = Significant Unavoidable
N/A = Not Applicable

Salt Flat Bridge

Impact 3.2-1: Construction of the proposed Trinity River Bridges Project could temporarily disrupt existing land uses adjacent to the project site. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1 and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, a new bridge would not be constructed at the Salt Flat site. There would be no temporary disruption to existing land uses within or adjacent to the site.

Proposed Action (Replacement Downstream, Private Ownership)

The existing land use within the project site is rural residential. The nearest residences outside of the ESL occur approximately 175 feet south (downstream) of the existing Salt Flat Bridge structure. No agricultural uses exist within the project area, nor are there any lands designated as Prime Farmland, Unique Farmland, or Farmlands of Statewide Importance.

Construction of new bridge just downstream of the existing bridge (i.e., Proposed Action) could result in the disruption of a private well and water lines located along the north (upstream) edge of Salt Flat Road (Bonk), northeast of the existing bridge and a service well located south of the western (right) abutment (Heinsohn). A portion of the service lines along Salt Flat Road may need to be relocated and the well located near the western abutment will be relocated downstream beyond the abutment footprint and construction limit. Relocation of these private facilities would result in a short-term disruption.

Construction of the proposed project could also result in the following potential nuisance effects to the adjacent residences: limiting access to the river for recreational activities, noise, disruption of access to residences, and short-term traffic disruptions. Impacts relating to water resources are discussed under Section 3.4, impacts relating to recreational activities are discussed under Section 3.8; impacts relating to noise are discussed under Section 3.16; and potential impacts relating to traffic disruption are discussed under Section 3.18.

Alternative 1 (Replacement Upstream, Private Ownership)

Temporary land use impacts associated with the disruption of existing land uses under Alternative 1 would be similar to the Proposed Action, with the exception being that the private well currently located downstream of the existing bridge (Heinsohn) would not need to be relocated. Under Alternative 1, the private well and associated service line along the north (upstream) edge of Salt Flat Road (Bonk) may need to be relocated.

Alternative 2 (Replacement Upstream, Public Ownership)

Temporary land use impacts associated with the disruption of existing land uses would be similar to the Proposed Action and Alternative 1, with the exception being that ownership of the new bridge would be converted from private to public ownership. Under Alternative 2, the private well and associated service line along the north edge of Salt Flat Road (Bonk) may still need to be relocated. While transfer of ownership from a private entity (Salt Flat homeowners) to a public entity (Trinity County via the BLM) would not have an effect or temporary disruption of existing land uses during construction, long-term operation of a publicly-owned bridge could result in a disruption. This potential impact is analyzed below under Impact 3.2-2.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action and Alternative 1

SF-1a: The BOR shall clearly identify all private wells and associated service lines, construction staging areas and potential access routes on the final design drawings.

SF-1b: Prior to the start of construction, the BOR shall meet with owners of the private well facilities (i.e., Bonk and Heinsohn) to ensure and coordinate potential well and/or service line relocation efforts. The coordination should include, at a minimum, agreement on the following: new site to relocate affected facility; schedule to implement the relocation effort; and identification of any interim water supply measures (i.e., truck in water). The BOR shall be responsible for all costs associated with completing these efforts.

SF-1c: Construction bid documents will require that access be maintained, though temporary closures of short duration will occur, throughout the construction period for all private residences adjacent to the project.

SF-1d: During the construction phase of the project, the BOR shall limit the amount of daily construction equipment traffic by staging most construction equipment and vehicles on the project site at the end of each work day.

Alternative 2

SF-1a: The BOR shall clearly identify all private wells and associated service lines, construction staging areas and potential access routes on the final design drawings.

SF-1b: Prior to the start of construction, the BOR shall meet with owners of the private well facilities (i.e., Bonk) to ensure and coordinate potential well and/or service line relocation efforts. The coordination should include, at a minimum, agreement on the following: new site to relocate affected facility; schedule to implement the relocation effort; and identification of any interim water supply measures (i.e., truck in water). The BOR shall be responsible for all costs associated with completing these efforts.

SF-1c: Construction bid documents will require that access be maintained, though temporary closures of short duration will occur, throughout the construction period for all private residences adjacent to the project.

SF-1d: During the construction phase of the project, the BOR shall limit the amount of daily construction equipment traffic by staging most construction equipment and vehicles on the project site at the end of each work day.

Significance after Mitigation: *Less than Significant.*

Impact 3.2-2: Future operation of the proposed Trinity River Bridges Project could disrupt existing land uses adjacent to the project site. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1; Significant Unavoidable Impact for Alternative 2.***

No-Action Alternative

Since a new bridge would not be constructed at the Salt Flat site under the No-Action Alternative, there would be no long-term disruption to existing land uses within or adjacent to the site due to operation of a new bridge.

Proposed Action (Replacement Downstream, Private Ownership)

The operation of a new downstream bridge (Proposed Action) would not result in land uses that are in conflict with existing or planned land uses. Operation of the replacement bridge structure would not significantly change or disrupt existing land uses adjacent to the project site since the new bridge would remain under private ownership. The project site currently supports an existing one-lane gravel road and bridge crossing over the Trinity River, and the new structure would be compatible with the adjacent land uses.

Alternative 1 (Replacement Upstream, Private Ownership)

The operation of a new upstream bridge under Alternative 1 would not result in land uses that are in conflict with existing or planned land uses. Operation of the replacement bridge structure would not significantly change or disrupt existing land uses adjacent to the project site since the new bridge under Alternative 1 would remain under private ownership. The project site currently supports an existing one-lane gravel road and bridge crossing over the Trinity River, and the new structure would be compatible with the adjacent land uses.

Alternative 2 (Replacement Upstream, Public Ownership)

Implementation of Alternative 2 would involve the operation of a new upstream bridge under public ownership, instead of private ownership. If the County were to take over ownership of a new bridge, the development of a turn-around for emergency vehicles on the west (right) side of the river would be required. In addition, public ownership of the new bridge could accommodate the eventual development of a recreation/river access point at the site. There are no current plans to develop the site as a public recreation point at this time; however, the 1986 Trinity River Access Plan (Lewiston Community Plan [County 1986]) identifies the location as a potential public access point. Even if improved pubic access is not developed at the Salt Flat site, there is potential for increased public usage along the Trinity River since the new bridge and roadway approaches would be publicly-owned. Increased public usage could result in associated increases in human-induced noise disturbances, unauthorized public parking adjacent to the new bridge, trespassing on private property, and increased litter/waste, all of which would adversely affect the existing rural residential land uses in the area.

Mitigation Measures

No-Action Alternative, Proposed Action, Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: *N/A.*

Alternative 2

SF-2a: Following construction of the new bridge, the BOR, in coordination with the BLM and the County, shall post signs on both sides of the bridge that prohibit parking along the bridge and roadway on private lands.

SF-2b: Following construction of the new bridge, the BOR, in coordination with the BLM and the County, shall develop a facility to accommodate increased public access. At a minimum, a public restroom, parking, and trash collection facility will be installed.

Based on the CEQA significance threshold, as set forth on page 3.2-23, stating that impacts would be significant if they "[r]esult in land uses that are incompatible with existing and planned land uses adjacent to project facilities," it is concluded that the increased presence of members of the public in a heretofore secluded private area would lead to significant effects in the form of increased litter, noise, and similar nuisance-like impacts. The threshold for

significant impacts under NEPA, however, requires an intensity and extent that is greater in scope than that required under CEQA. Under NEPA, escalated public presence in the area might lead to increased noise levels, litter, and some loss of privacy for existing residents, but such changes by themselves do not rise to the level of significant environmental effects. Envisioned increases in local public use would likely be sporadic in nature, and would not necessarily involve significant numbers of public visitors at any one time. The posting of signs, as required by Mitigation Measure SF-2a, should discourage concentrations of members of the public immediately near the new bridge structure. The development of public facilities, as required by Mitigation Measure SF-2b, would diminish impacts on the environment from increased public usage. Neither mitigation measure nor their combination, however, would completely mitigate CEQA defined public usage impacts on the Salt Flat community, which has clearly expressed their intention to retain control over Salt Flat Bridge ownership and access.

Significance after Mitigation: *Significant Unavoidable for CEQA purposes, Less than Significant for NEPA purposes*

Impact 3.2-3: Construction of the proposed Trinity River Bridges Project would result in the conversion of a small portion of vacant land to a new facility. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action, Alternative 1 and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, vacant land at the Salt Flat site would not be converted to a new bridge facility.

Proposed Action (Replacement Downstream, Private Ownership)

Construction of a new bridge downstream of the existing bridge at the Salt Flat site would convert a relatively small portion of vacant land (i.e., less than an acre) to a new bridge facility. The land that would be affected is currently privately owned and zoned Rural Residential. Construction of a new bridge would be an allowable use for lands classified as Rural Residential. In addition, construction of a new bridge at this location would not divide an established community since another bridge is already present at this location.

Alternative 1 (Replacement Upstream, Private Ownership)

Construction of a new bridge upstream of the existing bridge at the Salt Flat site would convert a relatively small portion of vacant land (i.e., less than an acre) to a new bridge facility. The land that would be affected is currently under public ownership (BLM). Construction of a new bridge that would be converted to private ownership would be an allowable use, but would require the following:

- The BLM would need to enter into an ROW agreement with the Salt Flat Homeowners Association with the potential need to post a bond;
- Approval of maintenance and liability agreements between BLM and the Salt Flat Homeowners Association to ensure that the BLM is not held responsible for potential injury or damages that might occur in association with the ROW agreement.

Similar to the Proposed Action, construction of a new bridge at this location would not divide an established community since another bridge is already present at this location.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction of a new bridge upstream of the existing bridge at the Salt Flat site would convert a relatively small portion of vacant land (i.e., less than an acre) to a new bridge facility. The land that would be affected is currently under public ownership (BLM). Construction of a new bridge would require a long-term bridge ROW agreement between the BLM and Trinity County and assignment of Salt Flat Road maintenance responsibilities to Trinity County. As part of this agreement, the County would need to develop a turn-around at the western approach (i.e., river right) for the road to meet County Road guidelines. Even with these associated improvements, construction of a new bridge at this location would not divide an established community since another bridge is already present at this location.

Mitigation Measures

No-Action Alternative, Proposed Action, Alternative 1, Alternative 2

Since no significant impacts were identified for these alternatives, no mitigation is required.

Significance after Mitigation: *N/A.*

Impact 3.2-4 Absent proper design, implementation of the proposed Trinity River Bridges Project could be inconsistent with the goals, policies, and objectives of the Trinity County General Plan, as well as the local community plans, policies, and ordinances. Because the Project has been designed with all applicable goals, policies, and objectives in mind, however, no such inconsistencies exist. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action, Alternative 1 and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, a new bridge would not be constructed at the Salt Flat site. There would be no inconsistency with the goals, policies, and objectives of the Trinity River General Plan, or other local community plans, policies, or ordinances.

Proposed Action (Replacement Downstream, Private Ownership), Alternative 1 (Replacement Upstream, Private Ownership), Alternative 2 (Replacement Upstream, Public Ownership)

Implementation of the Proposed Action, Alternative 1, or Alternative 2 is not anticipated to introduce land uses that are incompatible with existing or proposed land uses, nor would it conflict with any land use plan, policy, or ordinance. The Proposed Action, Alternative 1, and Alternative 2 construction would each be consistent with the County's Fire Safe Ordinance, which includes the following specifications:

Roadways: roads shall be constructed to provide a minimum of two nine-foot traffic lanes providing two-way traffic flow; surfaces shall be capable of supporting a 40,000 pound load, road grade shall not exceed 16 percent, no roadway shall have a horizontal inside radius of curvature of less than 50 feet and an additional surface width of four feet shall be added to curves of 50-100 feet radius and two feet added to those from 100-200 feet; length of vertical curves in roadways shall be not less than 100 feet; turnaround radius shall be 40 feet from the center line of the road; turnouts shall be a minimum of 10 feet wide and 30 feet long with a minimum of 25 foot taper on each end.

Roadway structures: structures shall be constructed to carry at least the maximum load and provide the minimum vertical clearance as required by Vehicle Code Sections 35550, 35750, and 35250; appropriate signing shall reflect the

capability of each bridge; a bridge with only one traffic lane may be authorized but must have unobstructed visibility from one end to the other and turnouts at both sides.

Gate Entrances: Gate entrances shall be at least two feet wider than the width of the traffic lane(s) serving the gate.

Signing: all newly constructed or approved roads, streets, and buildings shall be designated by names or numbers, posted on signs clearly visible and legible from the roadway; size of letters, numbers, and symbols for street and road signs shall be a minimum 3 inch letter height, 3/89 inch stroke, reflectorized, contrasting with the background color of the sign; street and road signs shall be visible and legible from both directions of vehicle travel for a distance of at least 100 feet; height shall be uniform County wide; a sign identifying traffic access or flow limitations, including but not limited to weight or vertical clearance limitations, shall be placed at the intersection preceding the limitation and no more than 100 feet before the limitation.

As noted in **Table 3.2-7**, the Proposed Action, Alternative 1, and Alternative 2 would each be consistent with the County's floodplain ordinance.

TABLE 3.2-7
CONSISTENCY OF SALT FLAT BRIDGE PROPOSED ACTION AND PROJECT ALTERNATIVES WITH THE COUNTY'S FLOODPLAIN ORDINANCE

Objectives	Assessment of Consistency
1. Protect human life and health.	The Proposed Action, Alternative 1, and Alternative 2 are all designed to ensure continued protection of human life and health.
2. Minimize expenditure of public money for costly flood control projects.	Not applicable to the Proposed Action or Alternatives 1 and 2.
3. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public.	The Proposed Action, Alternative 1, and Alternative 2 are all designed to protect public safety.
4. Minimize prolonged business interruptions.	Not applicable to the Proposed Action or Alternatives 1 and 2.
5. Minimize damage to public facilities and utilities, such as water and gas mains, electricity, telephone, sewer lines, streets and bridges located in areas of special flood hazards.	The Proposed Action, Alternative 1, and Alternative 2 are all designed to minimize damage to public facilities and utilities, as well as improve bridge safety under flood conditions.
6. Help maintain a stable tax base by providing for sound use and development of areas of special flood hazard so as to minimize future flood blight areas.	Not applicable to the Proposed Action or Alternatives 1 and 2.
7. Ensure that potential buyers are notified that property is in an area of special flood hazard.	Not applicable to the Proposed Action or Alternatives 1 and 2.
8. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.	Not applicable to the Proposed Action or Alternatives 1 and 2.
9. Minimize impacts to fish and wildlife resources that are associated with floodplains where such resources do not conflict with public health and safety.	Construction access and staging within the riparian habitats adjacent to the project site will be minimized to the extent feasible. All riparian areas disturbed by construction activities will be rehabilitated. The Proposed Action, Alternative 1, and Alternative 2 are all designed to minimize impacts to fish and wildlife resources. A primary purpose of the project is to allow appropriate fishery flows without conflicting with public health and safety.

Source: Trinity County Floodplain Management Ordinance (Ordinance No. 315-698, dated July 5, 2000)

The County's General Plan includes the following objectives regarding construction of new facilities within a flood hazard zoning district:

TABLE 3.2-8
CONSISTENCY OF SALT FLAT BRIDGE PROPOSED ACTION AND PROJECT ALTERNATIVES WITH THE DEVELOPMENT STANDARDS FOR LANDS LYING WITHIN THE FLOOD HAZARD OVERLAY (FHO) ZONING DISTRICT

Objectives	Assessment of Consistency
A. Anchoring	
1. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, and certified by a registered professional architect or engineer.	Bridge designs shall conform to AASHTO standard specifications for highway bridges and Trinity County design guidelines.
B. Construction Materials and Methods	
1. All new construction and substantial improvements shall be construction with flood resistant materials as specified in FEMA technical Bulletin TB 2-93, and utility equipment resistant to flood damage	Construction materials shall be used in accordance with AASHTO bridge design standards.
2. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.	Not applicable to this project.
3. All new construction and substantial improvements shall be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.	Construction materials shall be used in accordance with AASHTO bridge design standards.
4. All new construction and substantial improvements within zones AH or AO shall be constructed so that there are adequate drainage paths around structures on slopes to guide floodwaters around and way from proposed structures.	Construction materials shall be used in accordance with AASHTO bridge design standards.
C. Elevation and Flood-proofing	
1. New construction and substantial improvement of any structure shall have the lowest floor, including basement, a. In an AO zone elevated above the highest adjacent grade to a height equal to or exceeding one foot above the depth number specified in feet on the FIRM, or elevated at least three feet above the highest adjacent grade if no depth number is specified; and b. In all other zones (AE, AH, and A 1-30), elevated not less than one foot above the base flood elevation. Nonresidential structures may meet the standards in Section 3.C.2 (below). Upon completion of the structure, the elevation of the lowest floor, including the basement, shall be certified by a registered professional engineer or surveyor for proper elevation. Such certification, or verification, shall be provided to the Floodplain Administrator.	Not applicable to this project.
2. Nonresidential construction shall be elevated in conformance with Section 3.C.1 (above), or together with attendant utility and sanitary facilities:	Not applicable to this project.

TABLE 3.2-8 CONSISTENCY OF SALT FLAT BRIDGE PROPOSED ACTION AND PROJECT ALTERNATIVES WITH THE DEVELOPMENT STANDARDS FOR LANDS LYING WITHIN THE FLOOD HAZARD OVERLAY (FHO) ZONING DISTRICT	
Objectives	**Assessment of Consistency**
a. Be flood-proofed so that below the elevation recommended under section 3.C.1, the structure is watertight with walls substantially impermeable to the passage of water; b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and c. Be certified by a registered professional engineer or architect that the standards of this subsection are satisfied. Such certification shall be provided to the Floodplain Administrator.	
3. All new residential construction and substantial improvements fully enclosed below the lowest floor subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement shall follow the guidelines in FEMA Technical Bulletin TB 1-93 and TB-93 and must exceed the following minimum criteria: a. Have a minimum of two openings with a total net area of not less than one square inch for every square foot of enclosed area subject to flooding. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings, or devices, provided that they permit the automatic entry and exit of floodwaters; and b. Be certified by a registered professional engineer or architect.	Not applicable to this project.
D. Fill and Other Floodplain Encroachments	
1. All fill and other encroachments shall be certified by a registered professional engineer or architect not to increase the Base Flood Elevation more than 12 inches. Such a certification shall be provided to the Floodplain Administrator.	Project implementation under the Proposed Action, Alternative 1, or Alternative 2 will ensure that the base flood elevation will not be raised more than 12 inches. It is expected that the Proposed Action and Alternatives 1 and 2 will result in a slight decrease in the Base Flood Elevation, resulting in a net reduction in flood hazards.

As noted in **Table 3.2-8**, the Proposed Action, Alternative 1, and Alternative 2 would each be consistent with the County's development standards for lands lying within the FHO zoning district.

The Salt Flat site is located within the Lewiston Community Planning Area. The County General Plan and Lewiston Community Plan include the following goal and associated policies regarding construction of new facilities within a flood hazard zoning district:

TABLE 3.2-9 CONSISTENCY OF PROPOSED ACTION WITH THE TRINITY COUNTY GENERAL PLAN AND LEWISTON COMMUNITY PLAN	
Objectives	**Assessment of Consistency**
Trinity County General Plan Safety Element	
1. Reduce the loss of life and property by establishing development standards for areas subject to flooding: a. Require all development to meet federal, state, and local regulations for floodplain management protection; including the encouragement of upgrading existing structures to meet adopted standards. b. Require all development to meet the development standards of the National Flood Insurance Act regulations in Title 44 CFR Section 60.3, as implemented through the County Zoning Ordinance section 29.4 c. Prohibit the creation of new parcels that have no building sites outside of the 100-year floodplain, except for the creation of open space parcels. d. The County's Disaster Response Plan should include procedures to protect the public from flooding hazards. e. Maintain or return to Open Space lands subject to flooding.	The Proposed Action, Alternative 1, and Alternative 2 all meet those objectives and policies that are applicable.
2. Reduce the potential for the loss of life and property from dam failure inundation	The Proposed Action, Alternative 1, and Alternative 2 are each designed to ensure continued protection of human life and property.
Lewiston Community Plan - Hazards	
1. Insure that future developments do not create flood hazards either to themselves or to downstream developments.	The Proposed Action, Alternative 1, and Alternative 2 designed to ensure continued protection of downstream property.
2. Incorporate Flood Hazard Zoning on those areas of the Plan subject to flooding.	Not applicable to the proposed project.

As noted in **Table 3.2-9**, the Proposed Action, Alternative 1, and Alternative 2 would each be consistent with the County's General Plan and the Lewiston Community Plan.

Compatibility with the Trinity River Access Plan

No-Action Alternative

Under the No-Action Alternative, a new bridge would not be constructed at the Salt Flat site. There would be no inconsistency with the goals, policies, and objectives of the Trinity River Access Plan.

Proposed Action (Replacement Downstream, Private Ownership), Alternative 1 (Replacement Upstream, Private Ownership)

Salt Flat was identified as a potential future access point in the Trinity River Access Plan (Lewiston Community Plan [County 1986]). Development of future access points is dependent upon the ability of the responsible governmental agency to provide necessary improvements. Construction of the proposed Trinity River Bridges Project would not

preclude the development of future public river access; however, with the bridge being under private ownership, the sponsoring agency will need to negotiate with the Salt Flat Homeowner's Association or exercise eminent domain.

Alternative 2 (Replacement Upstream, Public Ownership)

Salt Flat was identified as a potential future access point in the Trinity River Access Plan (Lewiston Community Plan [County 1986]). Development of future access points is dependent upon the ability of the responsible governmental agency to provide necessary improvements. Construction of the proposed Trinity River Bridges Project would accommodate and be compatible with these planned recreational uses since the bridge would be located on public land. However, Salt Flat homeowners would need to agree to have public access to their lands or eminent domain procedures would be necessary to implement.

Mitigation Measures

No-Action Alternative, Proposed Action, Alternative 1, Alternative 2

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Bucktail Bridge

Impact 3.2-1: Construction of the proposed Trinity River Bridges Project could temporarily disrupt existing land uses adjacent to the project site. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the west approach roadway and the existing culvert will not be replaced at the Bucktail site. There would be no temporary disruption to existing land uses within or adjacent to the site.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

The existing land uses within the project site consist of rural residential and public lands owned by the BLM that are currently used public recreation. The nearest residences outside of and within the ESL occur approximately 375 feet to the west and 500 feet northwest of the existing Bucktail Bridge structure, respectively. No agricultural uses exist within the project area, nor are there any lands designated as Prime Farmland, Unique Farmland, or Farmlands of Statewide Importance.

Construction activities associated with the raised roadway and installation of the new arch culvert, including staging on BLM lands to the east, could result in the following potential nuisance effects to the adjacent residences and public recreation areas: limiting parking and access to the river for recreational activities, noise, disruption of access to residences, and short-term traffic disruptions. Impacts relating to recreational activities are discussed under Section 3.8; impacts relating to noise are discussed under Section 3.16; and potential impacts relating to traffic disruption are discussed under Section 3.18.

Alternative 1 (Raise Existing Upstream Levee)

Temporary land use impacts associated with the disruption of existing land uses would also occur under Alternative 1. Construction activities associated with raising the upstream levee would also affect residences located to the west and

north of Browns Mountain Road, primarily in the form of nuisance noise and air quality. Staging on BLM land to the northeast would limit public access to the river. Short-term traffic disruptions are not anticipated since there are no roadway or culvert improvements associated with Alternative 1. Construction access to the levee would be from an existing gravel access road off of Browns Mountain Road. Impacts relating to recreational activities are discussed under Section 3.8 and impacts relating to noise are discussed under Section 3.16.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

BT-1a: The BOR shall clearly identify all construction staging areas and potential access routes on the final design drawings.

BT-1b: Construction bid documents will require that access be maintained, though temporary closures of short duration will occur, throughout the construction period for all private residences adjacent to the project.

BT-1c: During the construction phase of the project, the BOR shall limit the amount of daily construction equipment traffic by staging most construction equipment and vehicles on the project site at the end of each work day.

Significance after Mitigation: *Less than Significant.*

Impact 3.2-2: Future operation of the proposed Trinity River Bridges Project could disrupt existing land uses adjacent to the project site. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the west approach roadway and the existing culvert will not be replaced at the Bucktail site. There would be no long-term disruption to existing land uses within or adjacent to the site due to operation of the improved roadway and new arch culvert.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

The proposed project would not result in land uses that are in conflict with existing or planned land uses. Operation of the modified roadway and new arch culvert would not significantly change or disrupt existing land uses adjacent to the project site. The project site currently supports an existing two-lane paved road and bridge crossing over the Trinity River, and the proposed improvements would be compatible with the adjacent land uses. Public and open space lands along the Trinity River will continue to be accessible and available for public use (i.e., passive recreation). Increasing the elevation of the western road approach would result in the loss of unimproved parking used by the public to access the river. An alternative parking area will be designed to replace this loss of unofficial parking by utilizing adjacent BLM lands or new road shoulders. As indicated under Impact 3.2-2, short-term recreation effects resulting from construction of the proposed project are evaluated in Section 3.8.

Alternative 1 (Raise Existing Upstream Levee)

Installation of a raised levee along the western bank of the Trinity River would not be in conflict with existing or planned land uses at the Bucktail site. A levee already exists at the project site and an improved levee would be compatible with adjacent land uses and would not impair access to the river.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impacts were identified for these alternatives, no mitigation is required.

Significance after Mitigation: *N/A.*

Impact 3.2-3: Construction of the proposed Trinity River Bridges Project would result in the conversion of a small portion of vacant land to a new facility. ***No Impact for the No-Action Alternative, Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, vacant land at the Bucktail site will not be converted to new facilities (i.e., raised roadway and new arch culvert).

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Construction of the Proposed Action at the Bucktail site would convert a small portion of vacant land to a new facility (i.e., elevated roadway approach and new arch culvert) and the temporary conversion of lands to the northwest for the temporary detour route. Elevating the western approach will increase the roadway fill prism for an approximate 400-foot segment to the west of the Bucktail Bridge. This land is currently managed by Trinity County as part of their ROW for Browns Mountain Road, which is currently maintained by the County. Use of this land to support the proposed improvements would not divide an established community since an existing bridge, culvert, and roadway system are already present at the Bucktail site. After the project has been completed, the areas used for the temporary detour route will be restored to pre-construction conditions.

Alternative 1 (Raise Existing Upstream Levee)

Implementation of Alternative 1 will require the conversion of a small amount of land upstream to accommodate the improvements to the existing upstream levee. This work would require a ROW agreement between the BLM and private property owner. Use of this land to support the proposed levee improvements would not divide an established community since a levee already exists at the same location.

Mitigation Measures:

No-Action Alternative, Proposed Action, Alternative 1

Since no significant impacts were identified for these alternatives, no mitigation is required.

Significance after Mitigation: *N/A.*

Impact 3.2-4 Absent proper design, implementation of the proposed Trinity River Bridges Project could be inconsistent with the goals, policies, and objectives of the Trinity County General Plan, as well as the local community plans, policies, and ordinances. Because the Project has been designed with all applicable goals, policies, and objectives in mind, however, no such inconsistencies exist. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the roadway improvements and new arch culvert would not be constructed at the Bucktail site. There would be no inconsistency with the goals, policies, and objectives of the Trinity River General Plan, or other local community plans, policies, or ordinances.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert), Alternative 1 (Raise Existing Upstream Levee),

Implementation of the Proposed Action or Alternative 1 is not anticipated to introduce land uses that are incompatible with existing or proposed land uses, nor would it conflict with any land use plan, policy, or ordinance. The Proposed Action, and Alternative 1 construction would each be consistent with the County's Fire Safe Ordinance, which includes the following specifications:

Roadways: roads shall be constructed to provide a minimum of two nine-foot traffic lanes providing two-way traffic flow; surfaces shall be capable of supporting a 40,000 pound load, road grade shall not exceed 16 percent, no roadway shall have a horizontal inside radius of curvature of less than 50 feet and an additional surface width of four feet shall be added to curves of 50-100 feet radius and two feet added to those from 100-200 feet; length of vertical curves in roadways shall be not less than 100 feet; turnaround radius shall be 40 feet from the center line of the road; turnouts shall be a minimum of 10 feet wide and 30 feet long with a minimum of 25 foot taper on each end.

Roadway structures: structures shall be constructed to carry at least the maximum load and provide the minimum vertical clearance as required by Vehicle Code Sections 35550, 35750, and 35250; appropriate signing shall reflect the capability of each bridge; a bridge with only one traffic lane may be authorized but must have unobstructed visibility from one end to the other and turnouts at both sides.

Gate Entrances: Gate entrances shall be at least two feet wider than the width of the traffic lane(s) serving the gate.

Signing: all newly constructed or approved roads, streets, and buildings shall be designated by names or numbers, posted on signs clearly visible and legible from the roadway; size of letters, numbers, and symbols for street and road signs shall be a minimum three-inch letter height, 3/89 inch stroke, reflectorized, contrasting with the background color of the sign; street and road signs shall be visible and legible from both directions of vehicle travel for a distance of at least 100 feet; height shall be uniform County wide; a sign identifying traffic access or flow limitations, including but not limited to weight or vertical clearance limitations, shall be placed at the intersection preceding the limitation and no more than 100 feet before the limitation.

As noted in **Table 3.2-10**, both the Proposed Action and Alternative 1 would each be consistent with the County's Floodplain Ordinance.

TABLE 3.2-10
CONSISTENCY OF BUCKTAIL PROPOSED ACTION AND PROJECT ALTERNATIVES WITH THE COUNTY'S FLOODPLAIN ORDINANCE

Objectives	Assessment of Consistency
1. Protect human life and health.	The Proposed Action and Alternative 1 are both designed to ensure continued protection of human life and health.
2. Minimize expenditure of public money for costly flood control projects.	Not applicable to the Proposed Action or Alternative 1.
3. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public.	The Proposed Action and Alternative 1 are both designed to protect public safety.
4. Minimize prolonged business interruptions.	Not applicable to the Proposed Action or Alternative 1.
5. Minimize damage to public facilities and utilities, such as water and gas mains, electricity, telephone, sewer lines, streets and bridges located in areas of special flood hazards.	The Proposed Action and Alternative 1 are both designed to minimize damage to public facilities and utilities, as well as improve bridge safety under flood conditions.
6. Help maintain a stable tax base by providing for sound use and development of areas of special flood hazard so as to minimize future flood blight areas.	Not applicable to the Proposed Action or Alternative 1.
7. Ensure that potential buyers are notified that property is in an area of special flood hazard.	Not applicable to the Proposed Action or Alternative 1.
8. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.	Not applicable to the Proposed Action or Alternative 1.
9. Minimize impacts to fish and wildlife resources that are associated with floodplains where such resources do not conflict with public health and safety.	Construction access and staging within the riparian habitats adjacent to each project site will be minimized to the extent feasible. All riparian areas disturbed by construction activities will be rehabilitated. The Proposed Action and Alternative 1 are both designed to minimize impacts to fish and wildlife resources.

Source: Trinity County Floodplain Management Ordinance

The County's General Plan includes the following goal and associated policies regarding construction of new facilities within a flood hazard zoning district:

TABLE 3.2-11
CONSISTENCY OF BUCKTAIL BRIDGE PROPOSED ACTION AND ALTERNATIVE 1 WITH THE DEVELOPMENT STANDARDS FOR LANDS LYING WITHIN THE FLOOD HAZARD OVERLAY (FHO) ZONING DISTRICT

Objectives	Assessment of Consistency
A. Anchoring	
1. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, and certified by a registered professional architect or engineer.	Bridge designs shall conform to AASHTO standard specifications for highway bridges and Trinity County design guidelines.

TABLE 3.2-11 CONSISTENCY OF BUCKTAIL BRIDGE PROPOSED ACTION AND ALTERNATIVE 1 WITH THE DEVELOPMENT STANDARDS FOR LANDS LYING WITHIN THE FLOOD HAZARD OVERLAY (FHO) ZONING DISTRICT	
Objectives	**Assessment of Consistency**
B. Construction Materials and Methods	
1. All new construction and substantial improvements shall be construction with flood resistant materials as specified in FEMA technical Bulletin TB 2-93, and utility equipment resistant to flood damage	Construction materials shall be used in accordance with AASHTO bridge design standards.
2. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.	Not applicable to this project.
3. All new construction and substantial improvements shall be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.	Construction materials shall be used in accordance with AASHTO bridge design standards.
4. All new construction and substantial improvements within zones AH or AO shall be constructed so that there are adequate drainage paths around structures on slopes to guide floodwaters around and way from proposed structures.	Construction materials shall be used in accordance with AASHTO bridge design standards.
C. Elevation and Flood-proofing	
1. New construction and substantial improvement of any structure shall have the lowest floor, including basement, a. In an AO zone elevated above the highest adjacent grade to a height equal to or exceeding one foot above the depth number specified in feet on the FIRM, or elevated at least three feet above the highest adjacent grade if no depth number is specified; and b. In all other zones (AE, AH, and A 1-30), elevated not less than one foot above the base flood elevation. Nonresidential structures may meet the standards in Section 3.C.2 (below). Upon completion of the structure, the elevation of the lowest floor, including the basement, shall be certified by a registered professional engineer or surveyor for proper elevation. Such certification, or verification, shall be provided to the Floodplain Administrator.	Not applicable to this project site.
2. Nonresidential construction shall be elevated in conformance with Section 3.C.1 (above), or together with attendant utility and sanitary facilities: a. Be flood-proofed so that below the elevation recommended under section 3.C.1, the structure is watertight with walls substantially impermeable to the passage of water; b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and c. Be certified by a registered professional engineer or architect that the standards of this subsection are satisfied. Such certification shall be provided to the Floodplain Administrator.	Not applicable to this project site.

TABLE 3.2-11 CONSISTENCY OF BUCKTAIL BRIDGE PROPOSED ACTION AND ALTERNATIVE 1 WITH THE DEVELOPMENT STANDARDS FOR LANDS LYING WITHIN THE FLOOD HAZARD OVERLAY (FHO) ZONING DISTRICT	
Objectives	**Assessment of Consistency**
3. All new residential construction and substantial improvements fully enclosed below the lowest floor subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement shall follow the guidelines in FEMA Technical Bulletin TB 1-93 and TB-93 and must exceed the following minimum criteria: a. Have a minimum of two openings with a total net area of not less than one square inch for every square foot of enclosed area subject to flooding. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings, or devices, provided that they permit the automatic entry and exit of floodwaters; and b. Be certified by a registered professional engineer or architect.	Not applicable to this project site.
D. Fill and Other Floodplain Encroachments	
1. All fill and other encroachments shall be certified by a registered professional engineer or architect not to increase the Base Flood Elevation more than 12 inches. Such a certification shall be provided to the Floodplain Administrator.	Project implementation under the Proposed Action or Alternative 1 will ensure that the base flood elevation will not be raised more than 12 inches.

As noted in **Table 3.2-11**, the Proposed Action and Alternative 1 would each be consistent with the County's development standards for lands lying within the FHO zoning district.

The Bucktail site is located within the Lewiston Community Planning Area. The County General Plan and Lewiston Community Plan include the following goals and associated policies regarding construction of new facilities:

TABLE 3.2-12 CONSISTENCY OF THE BUCKTAIL PROPOSED ACTION PROJECT ALTERNATIVE WITH THE TRINITY COUNTY GENERAL PLAN AND LEWISTON COMMUNITY PLAN	
Objectives	**Assessment of Consistency**
Trinity County General Plan Safety Element	
1. Reduce the loss of life and property by establishing development standards for areas subject to flooding: a. Require all development to meet federal, state, and local regulations for floodplain management protection; including the encouragement of upgrading existing structures to meet adopted standards. b. Require all development to meet the development standards of the National Flood Insurance Act regulations in Title 44 CFR Section 60.3, as implemented through the County Zoning Ordinance section 29.4 c. Prohibit the creation of new parcels that have no building sites outside of the 100-year floodplain, except for the creation of open space parcels. d. The County's Disaster Response Plan should include procedures to protect the public from flooding hazards. e. Maintain or return to Open Space lands subject to flooding.	The Proposed Action and Alternative 1 each meet those objectives and policies that are applicable.

TABLE 3.2-12 CONSISTENCY OF THE BUCKTAIL PROPOSED ACTION PROJECT ALTERNATIVE WITH THE TRINITY COUNTY GENERAL PLAN AND LEWISTON COMMUNITY PLAN	
Objectives	**Assessment of Consistency**
Trinity County General Plan Safety Element	
2. Reduce the potential for the loss of life and property from dam failure inundation	The Proposed Action and Alternative 1 are both designed to ensure continued protection of human life and property.
Lewiston Community Plan - Hazards	
1. Insure that future developments do not create flood hazards either to themselves or to downstream developments.	The Proposed Action and Alternative 1 are both designed to ensure continued protection of downstream property.
2. Incorporate Flood Hazard Zoning on those areas of the Plan subject to flooding.	Not applicable to the Proposed Action or Alternative 1.

Compatibility with the Trinity River Access Plan

No-Action Alternative

Under the No-Action Alternative, no roadway or culvert improvements would be constructed at the Bucktail site. There would be no inconsistency with the goals, policies, and objectives of the Trinity River Access Plan.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Bucktail is considered a major access point in the Trinity River Access Plan (Lewiston Community Plan [County 1986]). Major access points are high usage areas where ample off-street parking is to be provided as well as sanitary and garbage collection facilities. Included in this plan is an approximately one-mile-long access trail proceeding downstream along the south bank of the Trinity River. This trail would begin approximately 0.4 mile upstream of Bucktail Bridge and end approximately one mile downstream. Construction of the Proposed Action (i.e., elevated roadway approach to the west and new arch culvert) would be compatible with these planned recreational uses.

Alternative 1 (Raise Existing Upstream Levee)

Construction of an elevated levee upstream and to the west of the Bucktail Bridge under Alternative 1 would not be in conflict with any proposed access improvements identified in the Trinity River Access Plan.

Mitigation Measures:

No-Action Alternative, Proposed Action, Alternative 1

Since no significant impacts were identified for these alternatives, no mitigation is required.

Significance after Mitigation: *N/A.*

Poker Bar Bridge

Impact 3.2-1: Construction of the proposed Trinity River Bridges Project could temporarily disrupt existing land uses adjacent to the project site. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the new bridges would not be constructed at the Poker Bar site. There would be no temporary disruption to existing land uses within or adjacent to the site.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

The existing land use within the project site is rural residential. The nearest residences outside of and within the ESL occur approximately 200 feet to southeast and 250 feet to northwest of the existing Poker Bar bridge structures, respectively. No agricultural uses exist within the project area, nor are there any lands designated as Prime Farmland, Unique Farmland, or Farmlands of Statewide Importance.

Construction of the new upstream bridges under the Proposed Action could result in the following potential nuisance effects to the adjacent residences: limiting access to the river for recreational activities, noise, disruption of access to residences, and short-term traffic disruptions. Impacts relating to recreational activities are discussed under Section 3.8; impacts relating to noise are discussed under Section 3.16; and potential impacts relating to traffic disruption are discussed under Section 3.18.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Temporary land use impacts associated with Alternative 1 are similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

PB-1a: The BOR shall clearly identify all construction staging areas and potential access routes on the final design drawings.

PB-1b: Construction bid documents will require that access be maintained, though temporary closures of short duration will occur, throughout the construction period for all private residences adjacent to the project.

PB-1c: During the construction phase of the project, the BOR shall limit the amount of daily construction equipment traffic by staging most construction equipment and vehicles on the project site at the end of each work day.

Significance after Mitigation: *Less than Significant.*

Impact 3.2-2: Future operation of the proposed Trinity River Bridges Project could disrupt existing land uses adjacent to the project site. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Since new bridges would not be constructed at the Poker Bar site under the No-Action Alternative, there would be no long-term disruption to existing land uses within or adjacent to the project site.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Implementation of the Proposed Action would not result in land uses that are in conflict with existing or planned land uses. Operation of the new replacement bridge structures would not significantly change or disrupt existing land uses adjacent to the project site. The project site currently supports an existing one-lane paved road and two bridge crossings over the Trinity River, and the new structures would be compatible with the adjacent land uses. Open space lands along the Trinity River will continue to be accessible and available for passive recreational uses.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Long-term land use impacts associated with operation of the new downstream bridges under Alternative 1 are similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impacts were identified for these alternatives, no mitigation is required.

Significance after Mitigation: *N/A.*

Impact 3.2-3: Construction of the proposed Trinity River Bridges Project would result in the conversion of a small portion of vacant land to a new facility. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, vacant land at the Poker Bar site would not be converted to new bridge structures and approach roadways.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Construction of the new upstream bridges under the Proposed Action at Poker Bar would result in the conversion of a relatively small portion of vacant land to new bridge facilities and approach roadways. The land that would be affected is privately owned and zoned Rural Residential. Construction of the new bridges at the Poker Bar site would be an allowable use for these lands. In addition, construction of the new bridges would not divide an established community since there are already two existing bridges at the site.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction and operation of the new downstream bridges under Alternative 1 would result in similar impacts associated with the loss of vacant land, as described above for the Proposed Action. Similar to the proposed action, construction of new downstream bridges would not divide an established community.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impacts were identified for these alternatives, no mitigation is required.

Significance after Mitigation: *N/A.*

Impact 3.2-4 Absent proper design, implementation of the proposed Trinity River Bridges Project could be inconsistent with the goals, policies, and objectives of the Trinity County General Plan, as well as the local community plans, policies, and ordinances. Because the Project has been designed with all applicable goals, policies, and objectives in mind, however, no such inconsistencies exist. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the new bridges and associated approaches would not be constructed at the Poker Bar site. There would be no inconsistency with the goals, policies, and objectives of the Trinity River General Plan, or other local community plans, policies, or ordinances.

Proposed Action (Replacement Upstream with Two Single-Span Structures); Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Implementation of the Proposed Action or Alternative 1 at the Poker Bar site is not anticipated to introduce land uses that are incompatible with existing or proposed land uses, nor would it conflict with any land use plan, policy, or ordinance. The Proposed Action, and Alternative 1 construction would each be consistent with the County's Fire Safe Ordinance, which includes the following specifications:

Roadways: roads shall be constructed to provide a minimum of two nine-foot traffic lanes providing two-way traffic flow; surfaces shall be capable of supporting a 40,000 pound load, road grade shall not exceed 16 percent, no roadway shall have a horizontal inside radius of curvature of less than 50 feet and an additional surface width of four feet shall be added to curves of 50-100 feet radius and two feet added to those from 100-200 feet; length of vertical curves in roadways shall be not less than 100 feet; turnaround radius shall be 40 feet from the center line of the road; turnouts shall be a minimum of 10 feet wide and 30 feet long with a minimum of 25 foot taper on each end.

Roadway structures: structures shall be constructed to carry at least the maximum load and provide the minimum vertical clearance as required by Vehicle Code Sections 35550, 35750, and 35250; appropriate signing shall reflect the capability of each bridge; a bridge with only one traffic lane may be authorized but must have unobstructed visibility from one end to the other and turnouts at both sides.

Gate Entrances: Gate entrances shall be at least two feet wider than the width of the traffic lane(s) serving the gate.

Signing: all newly constructed or approved roads, streets, and buildings shall be designated by names or numbers, posted on signs clearly visible and legible from the roadway; size of letters, numbers, and symbols for street and road signs shall be a minimum three-inch letter height, 3/89 inch stroke, reflectorized, contrasting with the background color of the sign; street and road signs shall be visible and legible from both directions of vehicle travel for a distance of at least 100 feet; height shall be uniform County wide; a sign identifying traffic access or flow limitations,

including but not limited to weight or vertical clearance limitations, shall be placed at the intersection preceding the limitation and no more than 100 feet before the limitation.

As noted in **Table 3.2-13**, the Proposed Action and Alternative 1 are both consistent with the County's Floodplain Ordinance.

TABLE 3.2-13
CONSISTENCY OF POKER BAR PROPOSED ACTION AND ALTERNATIVE 1 WITH THE COUNTY'S FLOODPLAIN ORDINANCE

Objectives	Assessment of Consistency
1. Protect human life and health.	The Proposed Project and Alternative 1 are both designed to ensure continued protection of human life and health.
2. Minimize expenditure of public money for costly flood control projects.	Not applicable to the Proposed Action or Alternative 1.
3. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public.	The Proposed Project and Alternative 1 are both designed to protect public safety.
4. Minimize prolonged business interruptions.	Not applicable to the Proposed Action or Alternative 1.
5. Minimize damage to public facilities and utilities, such as water and gas mains, electricity, telephone, sewer lines, streets and bridges located in areas of special flood hazards.	The Proposed Project and Alternative 1 are both designed to minimize damage to public facilities and utilities, as well as improve bridge safety under flood conditions.
6. Help maintain a stable tax base by providing for sound use and development of areas of special flood hazard so as to minimize future flood blight areas.	Not applicable to the Proposed Action or Alternative 1.
7. Ensure that potential buyers are notified that property is in an area of special flood hazard.	Not applicable to the Proposed Action or Alternative 1.
8. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.	Not applicable to the Proposed Action or Alternative 1.
9. Minimize impacts to fish and wildlife resources that are associated with floodplains where such resources do not conflict with public health and safety.	Construction access and staging within the riparian habitats adjacent to each project site will be minimized to the extent feasible. All riparian areas disturbed by construction activities will be rehabilitated. The Proposed Project and Alternative 1 are both designed to minimize impacts to fish and wildlife resources.

Source: Trinity County Floodplain Management Ordinance

The County's General Plan includes the following objectives regarding construction of new facilities within a flood hazard zoning district:

TABLE 3.2-14
CONSISTENCY OF THE POKER BAR PROPOSED ACTION AND ALTERNATIVE 1 WITH THE DEVELOPMENT STANDARDS FOR LANDS LYING WITHIN THE FLOOD HAZARD OVERLAY (FHO) ZONING DISTRICT

Objectives	Assessment of Consistency
A. Anchoring	
1. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, and certified by a registered professional architect or engineer.	Bridge designs shall conform to AASHTO standard specifications for highway bridges and Trinity County design guidelines.
B. Construction Materials and Methods	
1. All new construction and substantial improvements shall be construction with flood resistant materials as specified in FEMA technical Bulletin TB 2-93, and utility equipment resistant to flood damage	Construction materials shall be used in accordance with AASHTO bridge design standards.
2. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.	Not applicable to this project site.
3. All new construction and substantial improvements shall be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.	Construction materials shall be used in accordance with AASHTO bridge design standards.
4. All new construction and substantial improvements within zones AH or AO shall be constructed so that there are adequate drainage paths around structures on slopes to guide floodwaters around and way from proposed structures.	Construction materials shall be used in accordance with AASHTO bridge design standards.
C. Elevation and Flood-proofing	
1. New construction and substantial improvement of any structure shall have the lowest floor, including basement, a. In an AO zone elevated above the highest adjacent grade to a height equal to or exceeding one foot above the depth number specified in feet on the FIRM, or elevated at least three feet above the highest adjacent grade if no depth number is specified; and b. In all other zones (AE, AH, and A 1-30), elevated not less than one foot above the base flood elevation. Nonresidential structures may meet the standards in Section 3.C.2 (below). Upon completion of the structure, the elevation of the lowest floor, including the basement, shall be certified by a registered professional engineer or surveyor for proper elevation. Such certification, or verification, shall be provided to the Floodplain Administrator.	Not applicable to this project site.
2. Nonresidential construction shall be elevated in conformance with Section 3.C.1 (above), or together with attendant utility and sanitary facilities: a. Be flood-proofed so that below the elevation recommended under section 3.C.1, the structure is watertight with walls substantially impermeable to the passage of water; b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and	Not applicable to this project site.

TABLE 3.2-14 CONSISTENCY OF THE POKER BAR PROPOSED ACTION AND ALTERNATIVE 1 WITH THE DEVELOPMENT STANDARDS FOR LANDS LYING WITHIN THE FLOOD HAZARD OVERLAY (FHO) ZONING DISTRICT	
Objectives	**Assessment of Consistency**
2. (cont.) c. Be certified by a registered professional engineer or architect that the standards of this subsection are satisfied. Such certification shall be provided to the Floodplain Administrator.	
3. All new residential construction and substantial improvements fully enclosed below the lowest floor subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement shall follow the guidelines in FEMA Technical Bulletin TB 1-93 and TB-93 and must exceed the following minimum criteria: a. Have a minimum of two openings with a total net area of not less than one square inch for every square foot of enclosed area subject to flooding. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings, or devices, provided that they permit the automatic entry and exit of floodwaters; and b. Be certified by a registered professional engineer or architect.	Not applicable to this project site.
D. Fill and Other Floodplain Encroachments	
1. All fill and other encroachments shall be certified by a registered professional engineer or architect not to increase the Base Flood Elevation more than 12 inches. Such a certification shall be provided to the Floodplain Administrator.	Project implementation will ensure that the base flood elevation will not be raised more than 12 inches.

As noted in **Table 3.2-14**, the Proposed Action and Alternative 1 would each be consistent with the County's development standards for lands lying within the FHO zoning district.

The Poker Bar site is located within the Douglas City Community Planning Area. The County General Plan and Douglas City Community Plan include the following goals and objectives regarding the construction of new facilities within a flood hazard zoning district:

TABLE 3.2-15 CONSISTENCY OF PROPOSED ACTION WITH THE TRINITY COUNTY GENERAL PLAN AND DOUGLAS CITY COMMUNITY PLAN	
Objectives	**Assessment of Consistency**
Trinity County General Plan Safety Element	
1. Reduce the loss of life and property by establishing development standards for areas subject to flooding: a. Require all development to meet federal, state, and local regulations for floodplain management protection; including the encouragement of upgrading existing structures to meet adopted standards. b. Require all development to meet the development standards of the National Flood Insurance Act regulations in Title 44 CFR Section 60.3, as implemented through the County Zoning Ordinance section 29.4 c. Prohibit the creation of new parcels that have no building sites outside of the 100-year floodplain, except for the creation of open space parcels. d. The County's Disaster Response Plan should include procedures to protect the public from flooding hazards. e. Maintain or return to Open Space lands subject to flooding.	The Proposed Action and Alternative both meet those objectives and policies that are applicable.
2. Reduce the potential for the loss of life and property from dam failure inundation	The Proposed Project and Alternative 1 are both designed to ensure continued protection of human life and property.
Douglas City Community Plan - Hazards	
1. Insure that future developments do not create flood hazards either to themselves or to downstream developments.	The Proposed Project and Alternative 1 are both designed to ensure continued protection of downstream property.
2. Incorporate Flood Hazard Zoning on those areas of the Plan subject to flooding.	Not applicable to the Proposed Action and Alternative 1.
3. Review the Poker Bar area for probable areas susceptible to flooding and leaching of effluent into the Trinity River.	Not applicable to the Proposed Action and Alternative 1.

Compatibility with the Trinity River Access Plan

No-Action Alternative

Under the No-Action Alternative, the new bridges and associated approach roadways would not be constructed at the Poker Bar site. There would be no inconsistency with the goals, policies, and objectives of the Trinity River Access Plan.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

No actions in conjunction with the Trinity River Access Plan have been identified at the Poker Bar.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

No actions in conjunction with the Trinity River Access Plan have been identified at the Poker Bar.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impacts were identified for these alternatives, no mitigation is required.

Significance after Mitigation: *N/A.*

Biggers Road Bridge

Impact 3.2-1: Construction of the proposed Trinity River Bridges Project could temporarily disrupt existing land uses adjacent to the project site. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, a new bridge would not be constructed at the Biggers Road site. There would be no temporary disruption to existing land uses within or adjacent to the site.

Proposed Action (Replacement Upstream)

The existing land use within the project site is rural residential. The nearest residence is located approximately 135 feet southwest (downstream) of the existing Biggers Road Bridge structure. No agricultural uses exist within the project area, nor are there any lands designated as Prime Farmland, Unique Farmland, or Farmlands of Statewide Importance. Construction of the proposed project could result in the following potential nuisance effects to the adjacent residences: limiting access to the river for recreational activities, noise, disruption of access to residences, and short-term traffic disruptions. Impacts relating to recreational activities are discussed under Section 3.8; impacts relating to noise are discussed under Section 3.16; and potential impacts relating to traffic disruption are discussed under Section 3.18.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Temporary land use impacts associated with the disruption of existing land uses would also occur under Alternative 1. Construction activities associated with raising Steel Bridge Road would affect residences located to the west of Biggers Road, primarily in the form of nuisance noise and air quality, and residences located north of Biggers Road, primarily in the form of traffic disruption and delays. Noise impacts are discussed under Section 3.16, impacts relating to air quality are discussed under Section 3.12, and impacts relating to traffic are discussed under Section 3.18.

Mitigation Measures

Proposed Action

BR-1a: The BOR shall clearly identify all construction staging areas and potential access routes on the final design drawings.

BR-1b: Construction bid documents will require that access be maintained, though temporary closures of short duration will occur, throughout the construction period for all private residences adjacent to the project.

BR-1c: During the construction phase of the project, the BOR shall limit the amount of daily construction equipment traffic by staging most construction equipment and vehicles on the project site at the end of each work day.

Significance after Mitigation: *Less than Significant.*

Alternative 1

BR-1a: The BOR shall clearly identify all construction staging areas and potential access routes on the final design drawings.

BR-1b: Construction bid documents will require that a minimum of one lane of traffic be maintained through the construction site at all times. If not, then the BOR and their contractor shall contact the affected property owners to coordinate feasible and mutually convenient dates/times during which construction could take place. This will ensure that the impact to property access is minimized to the extent possible and that the property owners have an opportunity to discuss any concerns. Coordination should occur a minimum of one-month prior to starting construction.

Advance notification in the form of roadside signs shall be provided by the BOR and/or their contractor that inform the driving public that a segment of Steel Bridge Road will be temporary closed to traffic with information such as the anticipated time frame/duration of closure, and also the times of day of closure, if only for certain hours. If feasible, the construction work should be done during off-peak. The roadside signs should be placed at the intersection of State Route 299 and Steel Bridge Road.

BR-1c: During the construction phase of the project, the BOR shall limit the amount of daily construction equipment traffic by staging most construction equipment and vehicles on the project site at the end of each work day.

Significance after Mitigation: *Less than Significant.*

Impact 3.2-2: Future operation of the proposed Trinity River Bridges Project could disrupt existing land uses adjacent to the project site. ***No Impact for the No-Action Alternative, Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Since a new bridge would not be constructed at the Biggers Road site under the No-Action Alternative, there would be no long-term disruption to existing land uses within or adjacent to the project site.

Proposed Action (Replacement Upstream)

The proposed project would not result in land uses that are in conflict with existing or planned land uses. Operation of the replacement bridge structure would not significantly change or disrupt existing land uses adjacent to the project site. The project site currently supports an existing one-lane dirt road and bridge crossing over the Trinity River, and the new structure would be compatible with the adjacent land uses. Although the bridge structure under the Proposed Action is designed to overtop at flows exceeding 15,000 cfs, this would be considered an improvement over the existing conditions.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Long-term land use impacts associated with operation of the new downstream bridges under Alternative 1 are similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impacts were identified for these alternatives, no mitigation is required.

Significance after Mitigation: *N/A.*

Impact 3.2-3: Construction of the proposed Trinity River Bridges Project would result in the conversion of a small portion of vacant land to a new facility. ***No Impact for the No-Action Alternative, Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, vacant land at the Biggers Road site would not be converted to a new bridge structure and approach roadways.

Proposed Action (Replacement Upstream)

Construction of the new upstream bridge under the Proposed Action at Biggers Road would result in the conversion of a relatively small portion of vacant land to new bridge facility and approach roadway. The land that would be affected is privately-owned and zoned rural residential. Construction of the new bridge at the Biggers Road site would be an allowable use for these lands. In addition, construction of the new bridge would not divide an established community since there are already is an existing bridge at the site.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Construction and operation of the upstream bridge and retaining wall associated with raising the profile of Steel Bridge Road under Alternative 1 would result in the loss of vacant land, similar to the impacts described above for the Proposed Action. These activities would require an easement from private property owners. Use of this land to support the proposed bridge and retaining wall would not divide an established community since a bridge and roadway already exists at the project site.

Mitigation Measures

No-Action Alternative, Proposed Action, Alternative 1

Since no significant impacts were identified for these alternatives, no mitigation is required.

Significance after Mitigation: *N/A.*

Impact 3.2-4 Absent proper design, implementation of the proposed Trinity River Bridges Project could be inconsistent with the goals, policies, and objectives of the Trinity County General Plan, as well as the local community plans, policies, and ordinances. Because the Project has been designed with all applicable goals, policies, and objectives in mind, however, no such inconsistencies exist. ***No Impact for the No-Action Alternative, Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the new bridge and associated approaches would not be constructed at the Biggers Road site. There would be no inconsistency with the goals, policies, and objectives of the Trinity River General Plan, or other local community plans, policies, or ordinances.

Proposed Action (Replacement Upstream), Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Implementation of the Proposed Action or Alternative 1 at the Biggers Road site is not anticipated to introduce land uses that are incompatible with existing or proposed land uses, nor would it conflict with any land use plan, policy, or ordinance. The Proposed Action, and Alternative 1 construction would each be consistent with the County's Fire Safe Ordinance, which includes the following specifications:

Roadways: roads shall be constructed to provide a minimum of two nine-foot traffic lanes providing two-way traffic flow; surfaces shall be capable of supporting a 40,000 pound load, road grade shall not exceed 16 percent, no roadway shall have a horizontal inside radius of curvature of less than 50 feet and an additional surface width of four feet shall be added to curves of 50-100 feet radius and two feet added to those from 100-200 feet; length of vertical curves in roadways shall be not less than 100 feet; turnaround radius shall be 40 feet from the center line of the road; turnouts shall be a minimum of 10 feet wide and 30 feet long with a minimum of 25 foot taper on each end.

Roadway structures: structures shall be constructed to carry at least the maximum load and provide the minimum vertical clearance as required by Vehicle Code Sections 35550, 35750, and 35250; appropriate signing shall reflect the capability of each bridge; a bridge with only one traffic lane may be authorized but must have unobstructed visibility from one end to the other and turnouts at both sides.

Gate Entrances: Gate entrances shall be at least two feet wider than the width of the traffic lane(s) serving the gate.

Signing: all newly constructed or approved roads, streets, and buildings shall be designated by names or numbers, posted on signs clearly visible and legible from the roadway; size of letters, numbers, and symbols for street and road signs shall be a minimum three-inch letter height, 3/89 inch stroke, reflectorized, contrasting with the background color of the sign; street and road signs shall be visible and legible from both directions of vehicle travel for a distance of at least 100 feet; height shall be uniform County wide; a sign identifying traffic access or flow limitations, including but not limited to weight or vertical clearance limitations, shall be placed at the intersection preceding the limitation and no more than 100 feet before the limitation.

As noted in **Table 3.2-16**, the Proposed Action and Alternative 1 are both consistent with the County's Floodplain Ordinance.

TABLE 3.2-16
CONSISTENCY OF BIGGERS ROAD PROPOSED ACTION AND ALTERNATIVE 1 WITH THE COUNTY'S FLOODPLAIN ORDINANCE

Objectives	Assessment of Consistency
1. Protect human life and health.	The Proposed Action and Alternative 1 are both designed to ensure continued protection of human life and health.

TABLE 3.2-16 CONSISTENCY OF BIGGERS ROAD PROPOSED ACTION AND ALTERNATIVE 1 WITH THE COUNTY'S FLOODPLAIN ORDINANCE	
Objectives	**Assessment of Consistency**
2. Minimize expenditure of public money for costly flood control projects.	Not applicable to the proposed project.
3. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public.	The Proposed Action and Alternative 1 are both designed to protect public safety.
4. Minimize prolonged business interruptions.	Not applicable to the proposed project.
5. Minimize damage to public facilities and utilities, such as water and gas mains, electricity, telephone, sewer lines, streets and bridges located in areas of special flood hazards.	The Proposed Action and Alternative 1 are both designed to minimize damage to public facilities and utilities, as well as improve bridge safety under flood conditions.
6. Help maintain a stable tax base by providing for sound use and development of areas of special flood hazard so as to minimize future flood blight areas.	Not applicable to the proposed project.
7. Ensure that potential buyers are notified that property is in an area of special flood hazard.	Not applicable to the proposed project.
8. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.	Not applicable to the proposed project.
9. Minimize impacts to fish and wildlife resources that are associated with floodplains where such resources do not conflict with public health and safety.	Construction access and staging within the riparian habitats adjacent to the project site will be minimized to the extent feasible. All riparian areas disturbed by construction activities will be rehabilitated, although retaining wall construction under Alternative 1 would require the removal of additional riparian vegetation. The Proposed Action and Alternative 1 are both designed to minimize impacts to fish and wildlife resources.

Source: Trinity County Floodplain Management Ordinance

As noted in **Table 3.2-16** above, the proposed project would be consistent with the County's floodplain ordinance.

TABLE 3.2-17 CONSISTENCY OF BIGGERS ROAD PROPOSED ACTION AND ALTERNATIVE 1 WITH THE DEVELOPMENT STANDARDS FOR LANDS LYING WITHIN THE FLOOD HAZARD OVERLAY (FHO) ZONING DISTRICT	
Objectives	**Assessment of Consistency**
A. Anchoring	
1. All new construction and substantial improvements shall be anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, and certified by a registered professional architect or engineer.	Bridge designs shall conform to AASHTO standard specifications for highway bridges and Trinity County design guidelines.
B. Construction Materials and Methods	
1. All new construction and substantial improvements shall be construction with flood resistant materials as specified in FEMA technical Bulletin TB 2-93, and utility equipment resistant to flood damage	Construction materials shall be used in accordance with AASHTO bridge design standards.

TABLE 3.2-17 CONSISTENCY OF BIGGERS ROAD PROPOSED ACTION AND ALTERNATIVE 1 WITH THE DEVELOPMENT STANDARDS FOR LANDS LYING WITHIN THE FLOOD HAZARD OVERLAY (FHO) ZONING DISTRICT	
Objectives	**Assessment of Consistency**
2. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.	Not applicable to this project.
3. All new construction and substantial improvements shall be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.	Construction materials shall be used in accordance with AASHTO bridge design standards.
4. All new construction and substantial improvements within zones AH or AO shall be constructed so that there are adequate drainage paths around structures on slopes to guide floodwaters around and way from proposed structures.	Construction materials shall be used in accordance with AASHTO bridge design standards.
C. Elevation and Flood-proofing	
1. New construction and substantial improvement of any structure shall have the lowest floor, including basement, a. In an AO zone elevated above the highest adjacent grade to a height equal to or exceeding one foot above the depth number specified in feet on the FIRM, or elevated at least three feet above the highest adjacent grade if no depth number is specified; and b. In all other zones (AE, AH, and A 1-30), elevated not less than one foot above the base flood elevation. Nonresidential structures may meet the standards in Section 3.C.2 (below). Upon completion of the structure, the elevation of the lowest floor, including the basement, shall be certified by a registered professional engineer or surveyor for proper elevation. Such certification, or verification, shall be provided to the Floodplain Administrator.	Not applicable to this project.
2. Nonresidential construction shall be elevated in conformance with Section 3.C.1 (above), or together with attendant utility and sanitary facilities: a. Be flood-proofed so that below the elevation recommended under section 3.C.1, the structure is watertight with walls substantially impermeable to the passage of water; b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and c. Be certified by a registered professional engineer or architect that the standards of this subsection are satisfied. Such certification shall be provided to the Floodplain Administrator.	Not applicable to this project.
3. All new residential construction and substantial improvements fully enclosed below the lowest floor subject to flooding shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement shall follow the guidelines in FEMA Technical Bulletin TB 1-93 and TB-93 and must exceed the following minimum criteria: a. Have a minimum of two openings with a total net area of not less than one square inch for every square foot of enclosed area subject to flooding. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves, or other coverings, or devices, provided that they permit the automatic entry and exit of floodwaters; and b. Be certified by a registered professional engineer or architect.	Not applicable to this project.

TABLE 3.2-17 CONSISTENCY OF BIGGERS ROAD PROPOSED ACTION AND ALTERNATIVE 1 WITH THE DEVELOPMENT STANDARDS FOR LANDS LYING WITHIN THE FLOOD HAZARD OVERLAY (FHO) ZONING DISTRICT	
Objectives	**Assessment of Consistency**
D. Fill and Other Floodplain Encroachments	
1. All fill and other encroachments shall be certified by a registered professional engineer or architect not to increase the Base Flood Elevation more than 12 inches. Such a certification shall be provided to the Floodplain Administrator.	Project implementation will ensure that the base flood elevation will not be raised more than 12 inches.

TABLE 3.2-18 CONSISTENCY OF BIGGERS ROAD PROPOSED ACTION AND ALTERNATIVE 1 WITH THE TRINITY COUNTY GENERAL PLAN AND DOUGLAS CITY COMMUNITY PLAN	
Objectives	**Assessment of Consistency**
Trinity County General Plan Safety Element	
1. Reduce the loss of life and property by establishing development standards for areas subject to flooding: a. Require all development to meet federal, state, and local regulations for floodplain management protection; including the encouragement of upgrading existing structures to meet adopted standards. b. Require all development to meet the development standards of the National Flood Insurance Act regulations in Title 44 CFR Section 60.3, as implemented through the County Zoning Ordinance section 29.4 c. Prohibit the creation of new parcels that have no building sites outside of the 100-year floodplain, except for the creation of open space parcels. d. The County's Disaster Response Plan should include procedures to protect the public from flooding hazards. e. Maintain or return to Open Space lands subject to flooding.	The proposed project meets those objectives and policies that are applicable.
2. Reduce the potential for the loss of life and property from dam failure inundation	The proposed project is designed to ensure continued protection of human life and property.
Douglas City Community Plan - Hazards	
1. Insure that future developments do not create flood hazards either to themselves or to downstream developments.	The proposed project is designed to ensure continued protection of downstream property.
2. Incorporate Flood Hazard Zoning on those areas of the Plan subject to flooding.	Not applicable to the proposed project.
3. Review the Poker Bar area for probable areas susceptible to flooding and leaching of effluent into the Trinity River.	Not applicable to the proposed project.
Lewiston Community Plan - Hazards	
1. Insure that future developments do not create flood hazards either to themselves or to downstream developments.	The proposed project is designed to ensure continued protection of downstream property.
2. Incorporate Flood Hazard Zoning on those areas of the Plan subject to flooding.	Not applicable to the proposed project.

Compatibility with the Trinity River Access Plan

No-Action Alternative

Under the No-Action Alternative, the new bridge and associated approach roadways would not be constructed at the Biggers Road site. There would be no inconsistency with the goals, policies, and objectives of the Trinity River Access Plan.

Proposed Action (Replacement Upstream)

The Douglas City Community Plan (County 1987) proposes to develop a short access trail on the east side of the Trinity River at the Biggers Road Bridge site. Construction of the proposed Trinity River Bridges Project would accommodate and be compatible with this planned recreational use.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Construction of Alternative 1 would also be compatible with the Trinity River Access Plan in a manner similar to that of the Proposed Action, described above.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impacts were identified for these alternatives, no mitigation is required.

Significance after Mitigation: *N/A.*

SECTION 3.3

Geology, Fluvial Geomorphology and Soils

3.3 Geology, Fluvial Geomorphology, and Soils

This section addresses geologic and fluvial geomorphologic issues related to construction and operation of the Trinity River Bridges Project. The following evaluation is based on review of existing literature and data and field reconnaissance to identify local geologic and geomorphologic conditions. Hydrology and groundwater are evaluated in Section 3.4, Water Resources and water quality issues are evaluated in Section 3.5, Water Quality.

3.3.1 Affected Environment/Environmental Setting

Regional Geology

The Trinity River Basin contains two parallel but distinct geologic provinces: the Coast Range Province and the inland Klamath Mountains Province. The Coast Range Province, which contains the well-known Franciscan Assemblage that is composed of unstable sedimentary and volcanic rocks, occupies a very small area in the lower reaches of the watershed. East of the Coast Range, the older Klamath Mountains are comprised of metamorphic and plutonic rocks.

The majority of the mainstem Trinity River Basin lies within the Klamath Mountains Geomorphic Province. The Klamath Mountains are divided into the Eastern Klamath, Central Metamorphic, Western Paleozoic and Triassic, and Western Jurassic sub-provinces. Rock units in these provinces generally dip to the east, with the older eastern unit overlying the younger western unit. Plutonic rocks are found intruding the metamorphic rocks throughout the watershed, the primary intrusion being the Shasta Bally Batholith. Several distinct sedimentary units associated with ancient terrace deposits and recent floodplain features are found throughout the watershed.

The proposed project sites are located adjacent to the Trinity River, between Lewiston and Douglas City in Trinity County, California. Within the project vicinity, there are three predominant geologic units. The Western Jurassic sub-province includes metamorphic rocks identified as the Abrams Mica Schist, and the granitic rocks of the Shasta Bally Batholith. Tertiary and Quaternary sedimentary deposits in a number of areas overlie these rock units. These sedimentary deposits are diverse in terms of depth, character, and lithology, and include recent floodplain and alluvial deposits, ancient terrace deposits of the Weaverville Formation, and large deep-seated landslide features.

Local Geology

A geologic report for the project sites was prepared by the BOR to aid in the development of design alternatives (Sherer 2001). This report contains detailed maps, photographs and subsurface information for each of the bridge locations. The following subsection describes the geologic units at each bridge site that were identified through field investigations.

Salt Flat

Rocks of the Shasta Bally Batholith underlie the Salt Flat project site. This rock unit is predominantly a quartz-biotite-hornblende diorite that is commonly referred to as granite. The unit forms the steep canyon walls on the right side (west) of the Trinity River and underlies the floodplain features on the left (east) bank. The granitic rock is soft and highly erodable in outcrop form, but very hard and durable under the floodplain of the Trinity River. Depth to bedrock ranged from five to sixteen feet, based on drill logs and coring information. Alluvial deposits include fine-textured silts and sands, with interbedded gravel and cobbles. One outcrop of Weaverville Formation is exposed

along the left bank. This formation was subject to extensive gold dredging in the late 1800s and resulted in extensive tailing deposits throughout the basin.

Bucktail

The rocks of the Shasta Bally Batholith also underlie the Bucktail project site. This rock unit is exposed in outcrops on both sides of the river. The granitic rock is soft and highly erodable in outcrop form, but very hard and durable under the floodplain of the Trinity River. Drill hole data suggest that the granitic unit extends throughout the project area. Depth to bedrock averaged twenty feet, based on drill logs and coring information. Alluvial deposits include fine-textured silts and sands, with interbedded gravel and cobbles. The Weaverville Formation is exposed in the left bank of the river and as an elevated terrace in several locations. This formation was subject to extensive gold dredging in the late 1800's and resulted in extensive tailing deposits at this location.

Poker Bar

Rocks of the Abrams Mica Schist formation underlie the alluvial deposits of the Poker Bar project site. Although no outcrops of this rock unit are exposed within the project area, they are visible on both sides of the canyon. Depth to bedrock ranged from surface exposures to 22 feet, based on drill logs and coring information. Alluvial deposits include fine-textured silts and sands, with interbedded gravel and cobbles. Weaverville Formation outcrops occur in several locations along the river and on the south slope as an elevated terrace. This formation was subject to extensive gold dredging that began in the late 1800s and resulted in extensive tailing deposits at this location.

Biggers Road

Rocks of the Abrams Mica Schist formation underlie the alluvial deposits that occupy the Biggers Road project site. Extensive outcrops of this rock unit are observed in and adjacent to the river and dominate the eastern bank (river left). Steel Bridge Road is constructed on a bench excavated into this rock unit. Drill-hole data identified depth to bedrock within five feet and outcrops are found throughout the site. Alluvial deposits, which include fine-textured silts and sands with interbedded gravel and cobbles, are located on the western bank (river right), and include flood plain and terrace features. Weaverville Formation outcrops occur in several locations along the river and on the right (west) slope as an elevated terrace. There is no evidence of large scale dredging activities at this location.

Regional Fluvial Geomorphology

Fluvial geomorphology was foundational in the evaluation and selection of the preferred alternative for the Trinity River Mainstem Fishery Restoration EIS/EIR (USFWS et al. 1999). Addressing the relationships between flow, sediment, and vegetation formed the basis for Appendix C, the Implementation Plan of the Preferred Alternative of the FEIS/EIR (USFWS et al. 2000a). This plan identified a number of actions relative to flow and sediment that would be implemented. The plan, which could possibly change after completion of a new SEIS and new ROD pursuant to the federal district court decision described in Section 1.1, included:

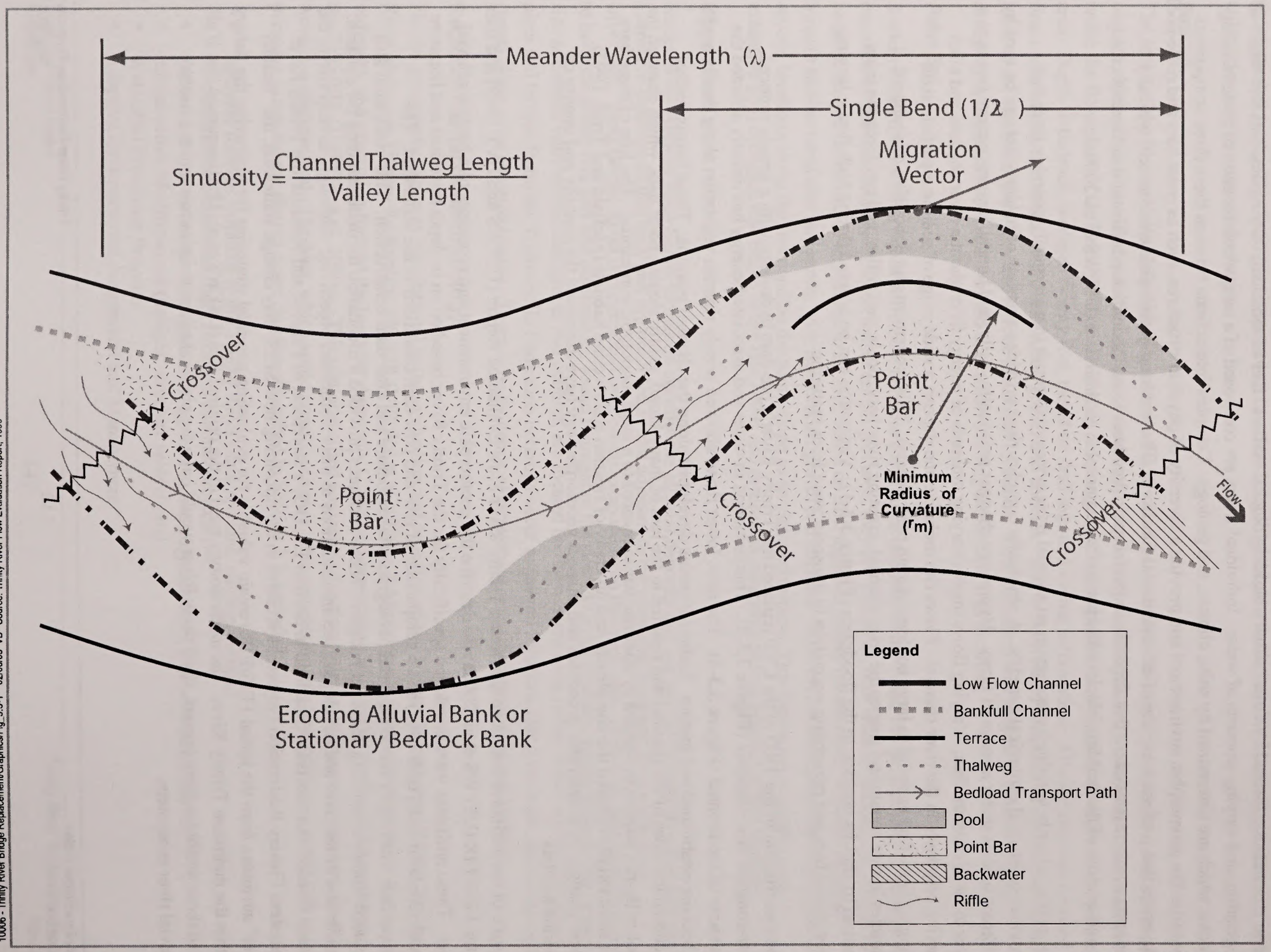
- Instream Release Volumes to the Trinity River (dam releases, storage, timing)
- Mechanical Rehabilitation (high flow and channel projects)
- Coarse and Fine Sediment Management Program (coarse augmentation, fine sediment control)
- Infrastructure Modifications (bridges, structure relocations)
- Watershed Protection Program
- Adaptive Environmental Assessment and Management

River channels are formed by three primary building blocks: various sizes of sediment, varying amounts and stages of vegetation, and varying amounts of water. Individual rivers are composed of a unique combination of these building blocks, which are determined by soils, climate, and geology. Complex interactions between these three components comprise the geomorphic environment and provide a diversity of physical structures, such as point bars and riffle-pool sequences that perform a variety of environmental functions. The resulting geomorphic environment typically supports a unique ecosystem that depends on geomorphic processes to maintain its fundamental structure. A change in one or more of the building blocks will change the geomorphic environment (USFWS et al. 2000a).

Generally, a highly variable hydrology in an alluvial river system will result in a physically complex river that provides substantial ecological benefits. A physically complex river provides a variety of habitats that can be used by different species under a range of flows. Hydrology changes seasonally, daily, and hourly, causing energy inputs to a river to be in constant flux. Varying flows impart varying amounts of energy throughout a river channel and elicit varying responses in the river channel. Flows can mobilize and deposit a wide range of sediment particle sizes (ranging from fine material to large boulders during peak events). This movement and deposition of sediment particles in turn scours and shapes the river channel, creating river bars, pools, and riffles, and can force the main channel to shift its position in the floodplain (**Figure 3.3-1**). Vegetation can be scoured during high flows, leaving open gravel bars and preventing vegetation in the scour zone from maturing.

The construction of the TRD of the CVP replaced the Trinity River's pre-dam hydrology with a greatly reduced, near-constant flow schedule (**Figure 3.3-2**). This reduction in water and associated energy has directly affected the character of the channel (**Figure 3.3-3**). The new, lower flows allowed woody riparian vegetation along the channel to become established and mature. Sediment berms developed along the channel margins. These berms further anchored the sides of the channel and resulted in the loss of many broad, gently sloping point bars, which changed the pool-riffle-run sequences created by alternate bar sequences to a large monotypic-run habitat. The loss of these bars has substantially reduced the complexity and diversity of riparian and riverine habitats (McBain and Trush 1997). These changes in geomorphic processes and channel geomorphology have decreased the quantity and quality of riverine habitats.

A suite of ten attributes was identified in the Trinity River Flow Evaluation Report (USFWS and HVT 1999) and used in the FEIS/EIR (USFWS et al. 2000a) (to describe the geomorphic environment and processes of a healthy alluvial river. These attributes were developed specifically for the Trinity River based on an in-depth historical and literature search (McBain and Trush 1997) and a comparison of pre- and post-dam conditions in the watershed. The comparison was largely based on aerial photographs taken before and after dam construction. This evaluation also included studies examining sediment budgets. These attributes provided a foundation for understanding the dynamic equilibrium of the river and developing recommendations to meet restoration objectives. Although, in response to the federal district court decision described in Section 1.1, DOI's Statement of Purpose and Need for the Trinity River Mainstem Fishery Restoration Project, as set forth in the upcoming new SEIS, may change somewhat, the "healthy river" attributes from the initial FEIS/EIR remain valuable for evaluating potential strategies for improving the fishery within the mainstem Trinity River. The methodology used in the original EIS (USFWS et al. 1999) assumed that if all 10 of these attributes were present, the Trinity River would have the physical characteristics to support a healthy alluvial river ecosystem.

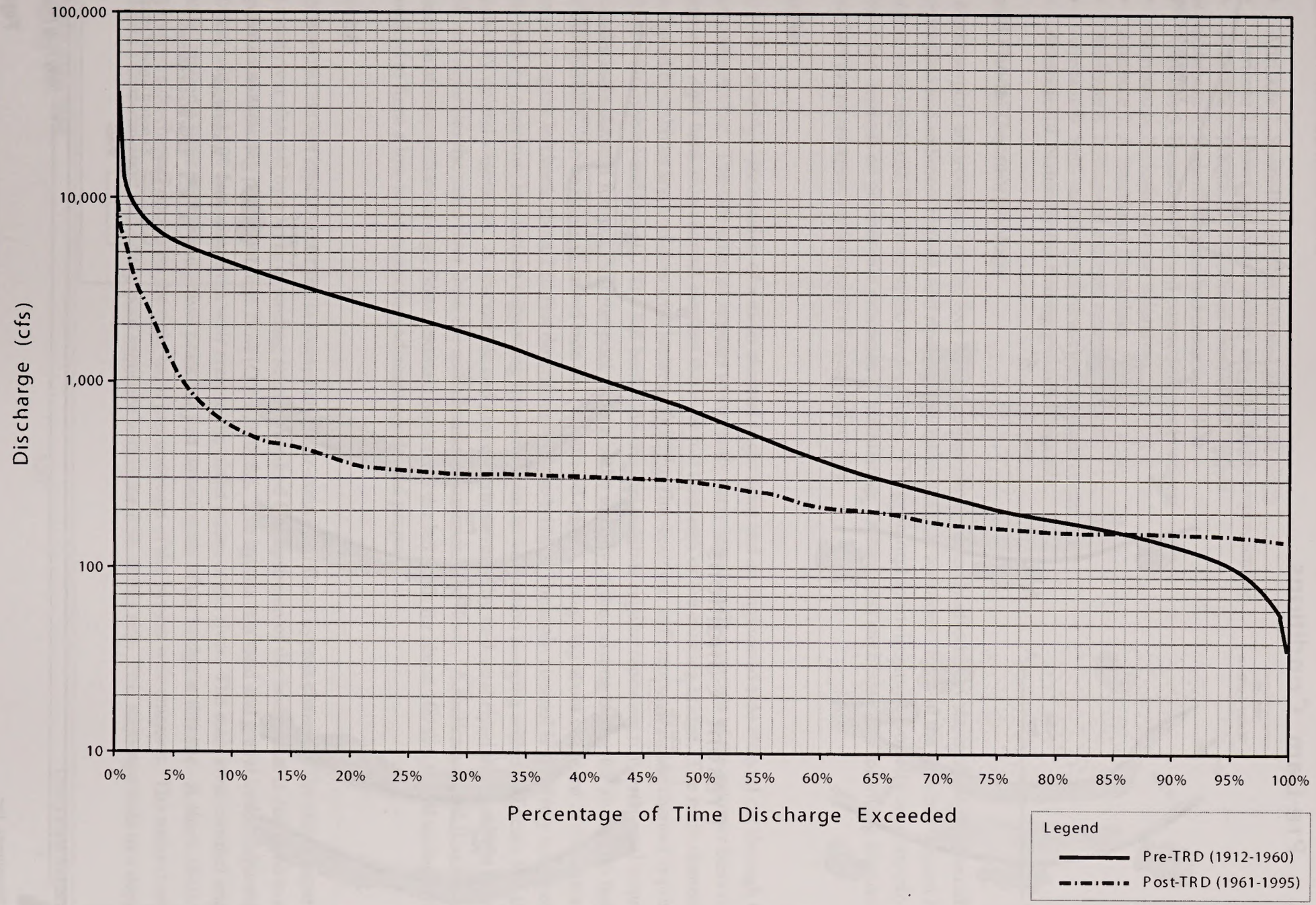


10006 - Trinity River Bridge Replacement/Graphics/Fig_3.3-1 02/06/03 VB Source: Trinity River Flow Evaluation Report, 1999

North State Resources, Inc.

Trinity River Bridges Project

Figure 3.3-1
Alternate Bar Formation

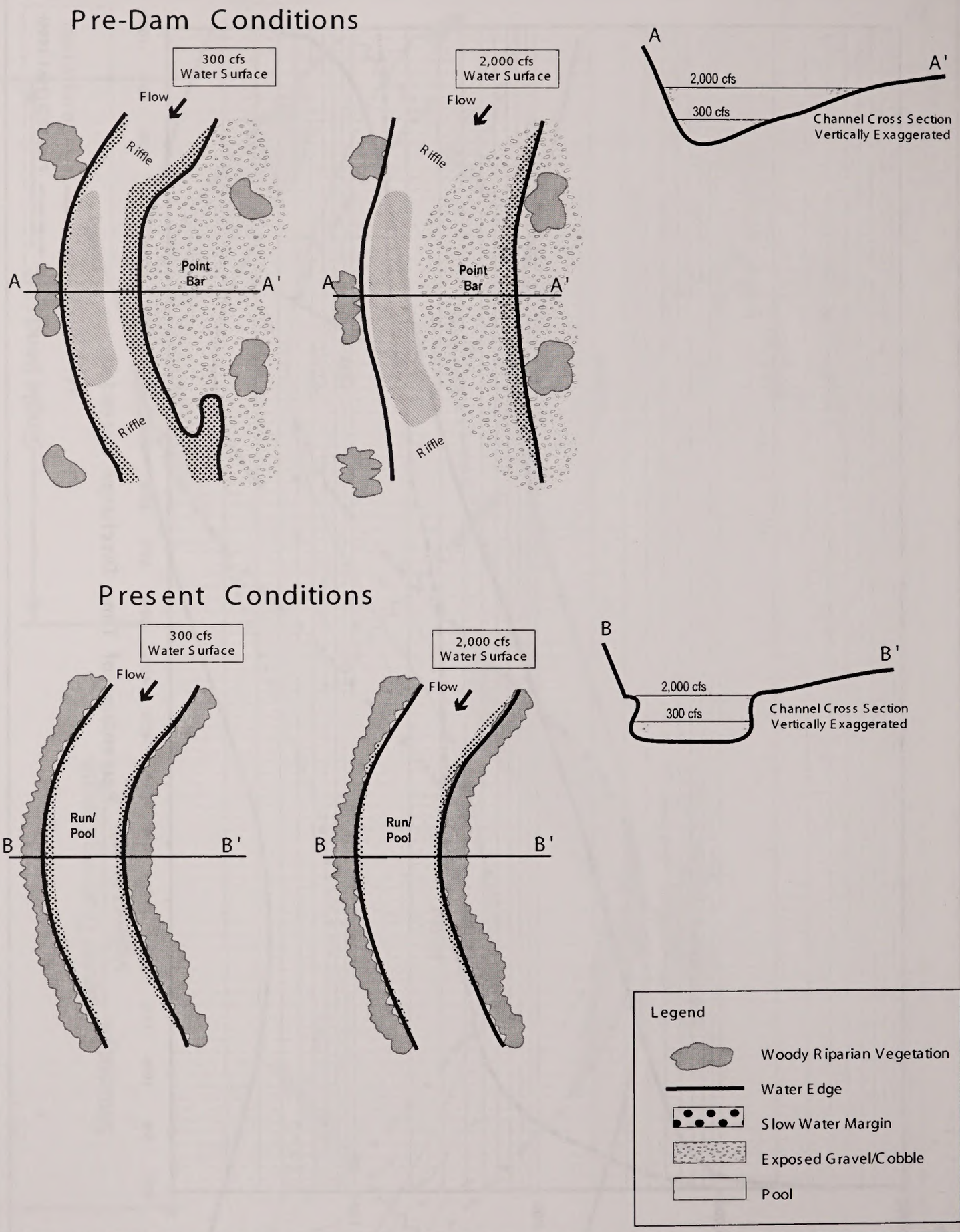


10006 - Trinity River Bridge Replacement/Graphics/Fig. 3.3-2 03/25/03 TK Source: Trinity River Flow Evaluation Report, 1999

North State Resources, Inc.

Trinity River Bridges Project

Figure 3.3-2
Pre-Dam/Post-Dam Hydrology



10006 - Trinity River Bridge Replacement/Graphics/Fig_3.3-3 03/24/03 TK Source : McBain & Trush, Inc.

Figure 3.3-3
Simplified Geomorphology

These attributes are listed below:

- Attribute 1. Spatially complex channel geomorphology
- Attribute 2. Flows and water quality are predictably unpredictable
- Attribute 3. Frequently mobilized channelbed surface
- Attribute 4. Periodic channelbed scour and fill
- Attribute 5. Balanced fine and coarse sediment budgets
- Attribute 6. Periodic channel migration
- Attribute 7. A functional floodplain
- Attribute 8. Infrequent channel resetting floods
- Attribute 9. Self- sustaining diverse riparian plant community
- Attribute 10. Naturally fluctuating groundwater table

Local Fluvial Geomorphology

The geomorphic environment for the four bridge project sites is directly affected by the hydrology, channelbed composition and sediment regime, and riparian vegetation at these locations. Each of the sites has distinct landscape features associated with the geomorphic environment. The geomorphic environment typically supports physical habitat that depends on geomorphic processes to maintain its fundamental structure. The following discussion describes the geomorphic environment of each project site.

Salt Flat

The Salt Flat bridge site consists of a main channel (right side) and an engineered side channel cut through the left bank sediment bar. The side channel appears to currently carry less than five percent of the summer base flow. An engineered right bank side-channel reenters the river just upstream of the existing bridge. The main channel bed is dominated by cobbles and boulders with lesser amounts of fine-textured sediments. The side channel is primarily bedded with cobbles and gravels. The left bank side-channel exhibits regular repeating riffle-run-pool sequences, while the main channel forms a long run-pool feature in the vicinity of the existing bridge for about 200 feet upstream and downstream. An engineered gravel side bar ("feathered edge"), occupying about one-third of the channel width, occurs along the left bank about 220 feet downstream of the bridge. The main channel is relatively confined on the right bank by a narrow, low terrace supporting late-seral riparian vegetation merging with an adjacent hill slope covered by upland vegetation. A low cobble and gravel berm covered by mid-seral riparian vegetation forms the left bank and separates the main river from the side channel at summer base flows. A shallow-sloped flood plain, accessible at intermediate to high flows, extends back from the left bank for about 100 feet to old tailings piles reworked to form a low levee protecting adjacent residential property.

Bucktail

The Bucktail culvert replacement site is located at a weir-controlled flood bypass channel. The site is separated from the main river channel by a levee extending several hundred feet upstream of the bridge that is designed to allow overflow into it during periods of high flow ($Q \geq 6{,}000$cfs). The bypass is a sand and gravel bedded channel about 200 feet wide and 500 feet long, from weir crest to the outlet return at the river. The main river channel angles sharply around a large cobble and gravel point bar just downstream of the bridge at this site. A short, shallow, engineered side-channel occurs on the right bank just upstream of the bypass weir entrance. The main channel exhibits a deep run-short riffle-deep pool sequence within the ESL at this site. This sequence ends in a deep pool,

locally known as "Bucktail Hole", at the downstream terminus of the bypass channel. The river bed is dominated by cobbles and gravel with greater amounts of fine-textured sediments (i.e., sand and fine gravels) in the deep pool. The channel is confined along the left bank by a steep, eroding gravel bank with mid-seral riparian vegetation upstream of the bridge and a steep, eroding, gravel and conglomerate hillside downstream of the bridge. The right bank consists of a low gravel bar with a side channel cut through it upstream of the bypass channel levee. Immediately upstream of the bridge, the right bank levee forms a steep gravel bank with mid-seral riparian vegetation. The right bank, downstream of the bridge, consists of a prominent point bar, and a shallow-sloped flood plain, the upper levels of which are covered with mid-seral riparian vegetation.

Poker Bar

The Poker Bar site consists of a left main channel and an engineered right side-channel cut through an old sediment bar. The side channel carries approximately 10 to 15 percent of the summer base flow. The two channels rejoin over 1000 feet downstream of the ESL. The bed composition of both channels is similar, dominated by cobbles and small boulders with lesser amounts of gravel and fines. Regularly spaced riffle-run-pool sequences occur in both channels. Relatively deep pools extending about 100 feet upstream and downstream occur at the existing bridges in both channels. The right side-channel is moderately confined between gravel and sand berms supporting mid- to late-seral riparian vegetation strands. The main river channel is confined on the left bank by a steep hill slope with a mix of late-seral riparian and upland vegetation, and on the right bank by gravel and sand berms supporting a mid- to late-seral riparian vegetation stand.

Biggers Road

The river channel at the Biggers Road crossing is in a straight, broad, single channel reach. The bed is dominated by cobbles and gravel interspersed with boulders and some bedrock outcrops. The existing bridge's left pier is on a bedrock outcrop. A riffle-run-pool-riffle sequence occurs in this ESL. A long, relatively deep run occurs at the existing bridge. The left bank has a narrow terrace adjoining a steep hill slope into which the Steel Bridge Road has been cut. The left bank terrace supports a late seral riparian forest. The right bank is a shallow-sloped terrace with residential lawns adjoining mixed late-seral riparian and upslope vegetation.

Slope Stability/Seismicity

Seismicity

Seismicity describes and quantifies the earthquake activity and potential of a given area. According to the BOR Dataweb (http://dataweb.usbr.gov/), Trinity County is located in a region of low historical seismicity and little known quaternary faulting. The region may be subjected to low to moderate levels of ground shaking from nearby or distant earthquakes. No Quaternary faults have been identified, and the horizontal earthquake activity in the area has been very low.

Maximum credible earthquakes (MCE) were determined for potentially significant faults including Likely, Hat Creek, Freshwater, Mendocino and San Andreas. The MCEs for these faults range from 7 to 8.5 Ms. A Mercalli Level of 6.5 was also estimated for local seismicity (County 2001).

Liquefaction

Liquefaction is the process whereby water-saturated granular soils are transformed to a liquid state during ground shaking. Loose to medium dense sands, gravels, and silts occurring below the water table are prone to liquefaction. The soils bordering the Trinity River in immediate proximity to the project sites are predominantly alluvial in nature. These soils have a potential to experience liquefaction, however no detailed analysis was conducted.

Landslides

Landslides triggered by seismic events are not considered significant in the project area due to the low historical seismicity of the region. Slope stability within the project area is dependent on the underlying geology. The Abrams Mica Schist underlying the project is prone to rock fall and shallow debris slides associated with road cut slopes. Soils developed on this rock type are shallow and prone to surficial erosion. The granitic rocks of the Shasta Bally Batholith are known for extreme rates of erosion, including shallow debris slides, rill and gully erosion. Evidence of shallow debris slides was observed at the Salt Flat and Biggers Road locations. Granitic terrain is observed within the immediate vicinity of Salt Flat and Bucktail sites.

Seiches

Seiches could occur in the project area as result of seismic or geologic activities. A seiche is a surge of undulating water flow in a body of water confined in a basin. Seiches commonly arise from a sudden local change in atmospheric pressure, accompanied by wind and occasionally tidal currents. They can also occur as the result of ground shaking caused by earthquakes, or by the force of large landslides or debris flows entering a water body. Local water bodies capable of generating a large-scale seiche include Trinity Lake, Lewiston Lake, and Grass Valley Creek Reservoir.

Volcanic Activity

Volcanic hazards in the project area are limited primarily to ash fall and minor seiches in Trinity and Lewiston Lakes. There are three active volcanoes in the Cascade Range: Mount Lassen, Mount Shasta, and the Medicine Lake Volcano. The project is located approximately 75 to 100 miles south/southwest of these volcanoes and would not likely be significantly affected by a volcanic eruption (County 2001).

Mineral Resources

Gold and quicksilver have historically been the principal minerals produced in Trinity County. Other resources include chromite, copper, manganese, platinum, and silver. Since 1956, miscellaneous stone, sand, and gravel have been the chief mineral products produced. Approximately 15 historic gold mines, one stone quarry, and one limestone quarry occur within 5 miles of the project study area but outside of the project ESL. Artificial fill, dredger tailings, and undifferentiated surficial deposits are located throughout the project area. These materials may be utilized in association with project construction.

Regional Soils

The soils in the project area are associated with three general soil map units (USDA 1998). These units transition from east to west and are correlated with the regional geology described in Section 3.3A. Several specific soil units are identified in association with the Trinity River. The Caris-Bamtush-Hoosimbim soil unit is derived from

metavolcanic, sedimentary and metasedimentary rocks of the Klamath Mountain Province. These soils are well-drained loamy sands with depths of 40 to 60 inches to bedrock. They have a high percentage of gravel and rock fragments in the lower horizons.

The Minersville-Tallowbox-Valcreek soil unit is derived from granitic rocks, including the Shasta Bally Batholith. These soils are excessively-drained sandy loams with depths in excess of 60 inches to bedrock. They have a high proportion of coarse sand and gravel in the lower horizons.

The Brownscreek-Dougcity-Barpeak soil unit is derived from the Abrams Mica Schist formation; part of the Klamath Mountain Province. These soils are well-drained loamy sands with depths of 40 to 60 inches to bedrock. They have a high percentage of gravel and rock fragments in the lower horizons.

Local Soils

In addition to the three primary map units, several specific soil complexes occur throughout the project area. Riverwash is found on the floodplains and alluvial fans in close proximity to the active channel. Riverwash makes up the actual stream channel and is comprised of varying amounts of sand, gravel, and cobble. These deposits are subject to periodic inundation and have minimal soil development. Dredger tailing deposits are associated with the floodplain and terrace features at each project site. These deposits are extensive at the Bucktail and Poker Bar sites and minimal at the other locations. Rock land consists of rock outcrops with shallow soils and occurs adjacent to the Trinity River, particularly at the Biggers Road project site.

All Bridge Sites

The soils on the study area are described in the *Soil Survey of Trinity County, California, Weaverville Area* (USDA 1998). A figure showing the soil map units within the study area is presented in the Delineation of Waters of the U.S. Including Wetlands Report for this project (NSR 2003), included as **Appendix H**. Two soil map units were identified within the project study area:

102 Atter Dumps, dredge tailings-Xerofluvents complex, 2-9 percent slopes. This soil map unit has a hydric component and hydric inclusions. The hydric landforms within this map unit are the floodplain channel, fluvial terrace and low floodplain. The subgroup taxonomy for the Atter series is *Typic Xerorthents*. Atter series soils are somewhat excessively drained.

217 Xerofluvents-Riverwash complex, 0-5 percent slopes. This soil map unit has a hydric component and hydric inclusions. The subgroup taxonomy for the Xerofluvents series is *Typic Xerofluvents*. The Xerofluvents series soils are well drained soils.

3.2.2 Regulatory Framework

Local

Trinity County Decomposed Granite Grading Ordinance

The Trinity County Decomposed Granite Grading Ordinance requires a grading permit from the Trinity County Transportation Department prior to construction of new roads or excavation in areas with decomposed granite soils, which includes the Shasta Batholith of decomposed granite soils. This ordinance applies only to private lands under the jurisdiction of Trinity County. It does not apply to federally managed lands. For the Trinity River Bridges

Project, the ordinance will only apply to the Salt Flat and Bucktail sites (since the activities may occur on private lands), as the Biggers Road and Poker Bar sites do not have decomposed granite soils.

Trinity County General Plan Goals and Objectives

The Trinity County General Plan contains goals and policies designed to guide the future physical development of the County, based on current conditions. The general plan contains all the state-required elements, including community development and design, transportation, natural resources, health and safety, noise, housing, recreation, economic development, public facilities and services, and air quality. The following goals and policies, relative to geology issues associated with the project study area, were taken from the applicable elements of the general plan (County 2001). This includes the Lewiston Community Plan (County 1986) and the Douglas City Plan (County 1987).

County Wide Goals and Objectives

Environmental

To strive to conserve those resources of the county that are important to its character and economic well-being:

- By assuring that developments occurring on these lands are compatible with the resources.

Safety Element

The following goals and objectives and policies are applicable to this project.

Seismic Safety Goal

A. Reduce the threat to life and property from seismic and geologic hazards.

B. Promote safety from seismic and geologic hazards

- Geologic hazards and seismic safety shall be considered in the preparation of environmental documents as required by CEQA.
- The County shall confirm that all construction and grading activities done will not adversely affect the stability of any slope.

Lewiston Community Plan Goals and Objectives

This plan includes the area centered on the Trinity River from Lewiston Lake to slightly downstream of the confluence of Grass Valley Creek and the Trinity River. Project sites within the planning area include Salt Flat and Bucktail.

Natural Resources

Goal: To encourage the sound use of mineral resources, especially sand and gravel operations, which reduce sedimentation of the river.

Hazards

Goal: To deter development away from unstable slopes or soils.

Land Use

Goal: To encourage the retention and utilization of resource land for timber production, agricultural uses and mineral extraction.

- Encourage mineral extraction activities, especially gravel extraction uses within the Trinity River.

Douglas City Community Plan

This plan includes the area centered on the Trinity River from Grass Valley Creek to slightly downstream of Steiner Flat. Project sites within the planning area include Poker Bar and Biggers Road bridge sites.

Hazards

Goal: To deter development away from unstable slopes or soils.

Natural Resources

Goal: Encourage the continued use of suitable lands for resource production purposes.

- Encourage the sound use of mineral resources, especially sand and gravel operations that also reduce the sedimentation in the Trinity River.

Land Use

Goal: To encourage the retention and utilization of resource land for timber production, agricultural uses and mineral extraction.

- Encourage mineral extraction activities, especially gravel extraction uses within the Trinity River.

Project Consistency with the Trinity County General Plan and Community Plans

As described in Chapter 1, Introduction, the proposed Trinity Bridges Project would:

- Provide safe and reasonable year-round access to parcels of land served by the Salt Flat, Bucktail, Poker Bar and Biggers Road bridges across the Trinity River.
- Allow dam operators maximum flexibility to provide instream flow releases from Lewiston Dam adequate to meet the fishery and geomorphic flow needs for the mainstem Trinity River and to fulfill the Trinity River TMDL for sediment and restore the coldwater fishery beneficial use.

The following project objectives apply to the project's lead/responsible agencies for CEQA purposes:

- Minimize the threat to public safety and potential damage to property posed by the existing high likelihood of flooding
- Provide maximum flexibility for implementing a variety of potential Trinity River fishery flow alternatives, as well as other flow alternatives outside the ROD such as increasing dam releases during periods of high downstream tributary inflows
- Allow for high-efficiency sediment transport in the Trinity River to maximize the amount of sediment transported on a per acre-foot basis so that Trinity River can be removed from California's Clean Water Act Section 303(d) Impaired Waterbodies List, while minimizing the total amount of water necessary to transport sediment through the river system

- Provide maximum flexibility for operations of the TRD during periods of high runoff and flooding which could result in increased water in storage available for multiple beneficial uses (i.e., fisheries, recreation, water supply, water quality and power production)
- Provide alternative access on a short-term basis during project implementation
- Recovery of fish and wildlife resources that are listed as threatened and endangered

The following objectives apply to the projects responsible and trustee agencies, including the HVT, NCRWQCB, the SLC, the CDFG, and the SWRCB:

- Comply with the Water Code to ensure the highest reasonable quality of waters of the state and allocate those waters to achieve the optimum balance of beneficial uses
- Protect the public trust assets of the Trinity River watershed
- Protect, conserve, restore, and manage fish, wildlife, and native plant resources
- Comply with the Water Quality Control Plan for the Hoopa Valley Indian Reservation to preserve and enhance water quality on the Reservation, and to protect the beneficial uses of water.

These project objectives are consistent with the applicable general plan goals and policies summarized above.

3.3.3 Environmental Consequences/Impacts and Mitigation Measures

Methodology

Data for the following analysis were taken from existing reports on local and site-specific geology. These reports include the following documents: Soil Survey of Trinity County, California, Weaverville Area (USDA 1998), Geologic Report for Treadwell (Biggers Road), Salt Flat, Bucktail, and Poker Bar Bridges Sites (Sherer 2001), Trinity River Mainstem Fishery Restoration, Trinity River Maintenance Flow Study Final Report (McBain and Trush 1997), Trinity County General Plan (2001), and Geographic Information Systems (GIS) data sources. The proposed project was then assessed against known geologic, geomorphic, and soil conditions present within the project study area.

Criteria for Determining Significance

Adverse impacts are considered significant if implementation of project alternatives could subject people, structures, or other resources to geologic or seismic hazards or disrupt, eliminate, or otherwise render unusable geologic or soil resources. Significant impacts would occur if the project would:

- Expose people, structures or critical utility facilities to major geologic hazards (including seismicity, landslides, seiches, and liquefaction);
- Involve changes in topography that would result in unstable soil conditions;
- Increase erosion rates to a level in which associated sedimentation levels could affect streams, rivers, or other water bodies;
- Interfere with existing, proposed, or potential development of mineral resources;
- Disturb or eliminate unique geologic or topographic features; and/or
- Be inconsistent with the ten Trinity River healthy alluvial river attributes.

Impacts and Mitigation Measures

Table 3.3-1 summarizes the potential geology, fluvial geomorphology, and soils impacts resulting from construction and operation of the Trinity River Bridges Project.

TABLE 3.3-1
SUMMARY OF GEOLOGY, FLUVIAL GEOMORPHOLOGY, AND SOILS IMPACTS FROM THE PROPOSED TRINITY RIVER BRIDGES PROJECT

Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Alternative 2
1. Implementation of the proposed Trinity River Bridges Project could result in the exposure of structures and people to geologic hazards including ground shaking and liquefaction.	Salt Flat	NI	S	S	S
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
2. Construction activities associated with the proposed Trinity River Bridges Project could potentially result in increased erosion and associated sedimentation of the Trinity River.	Salt Flat	NI	S	S	S
	Bucktail	NI	S	S	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
3. Implementation of the proposed Trinity River Bridges Project would be inconsistent with the ten Trinity River healthy river attributes.	Salt Flat	NI	LS	LS	LS
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A

Notes:
LS = Less than Significant S = Significant NI = No Impact SU = Significant Unavoidable
N/A = Not Applicable

Salt Flat Bridge

Impact 3.3.1: Implementation of the proposed Project could result in the exposure of structures and people to geologic hazards including ground shaking and liquefaction. ***No Impact for No-Action Alternative; Significant Impact for Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, a new bridge would not be constructed at the Salt Flat site. There would be no new exposure of structures and people to geologic hazards or loss of mineral resources.

Proposed Action (Replacement Downstream, Private Ownership)

Although the Trinity County area historically has experienced low seismicity, moderate to strong ground shaking could occur following a large earthquake on one of the potentially active faults in the region.

In the event of a significant earthquake, the bridge and any people on or under it would be exposed to geologic hazards. Although this would not represent the introduction of a new geologic hazard, as the existing bridge poses the same risk, since a geotechnical engineering study has not been completed for the proposed project site, this impact would be potentially significant.

Alternative 1 (Replacement Upstream, Private Ownership)

The potential for exposure of structures and people to geologic hazards including ground shaking and liquefaction associated with Alternative 1 is similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

The potential for exposure of structures and people to geologic hazards including ground shaking and liquefaction associated with Alternative 2 is similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance After Mitigation: N/A.

Proposed Action; Alternative 1; Alternative 2

SF-1a: Prior to final bridge design, BOR engineers shall identify potential engineering solutions to address construction on unstable materials. This may include one or more the following, as appropriate:

- Remove unstable fill before placement of widened bridge foundations and fill embankments.
- Extend foundations for bridge support columns through unstable materials into suitable dense materials (i.e., consolidated material, bedrock).
- Use rock bolting.

SF-1b: Final design of the bridge shall meet all Caltrans and AASHTO standard seismic construction and design code requirements to prevent collapse from and minimize structural damage from ground shaking and liquefaction.

Significance After Mitigation: *Less than Significant.*

Impact 3.3-2: Construction activities associated with the proposed Project could potentially result in increased erosion and associated sedimentation of the Trinity River. ***No Impact for No-Action Alternative; Significant Impact for Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative a new bridge would not be constructed at the Salt Flat site. No construction-related erosion or associated sedimentation of the Trinity River would occur.

Proposed Action (Replacement Downstream, Private Ownership)

Construction of a new bridge just downstream of the existing bridge (the Proposed Action) would result in the disturbance and loosening of soils and exposure to elements, increasing the potential for wind and water erosion. Increased wind and water erosion, and associated downstream sedimentation within the Trinity River, would occur if any soils were exposed during periods of high precipitation in late winter and early spring. Increased soil erosion and potential sedimentation is considered a significant impact. Impacts of turbidity levels specific to water quality degradation are analyzed in **Section 3.5**, Water Quality and associated impact to anadromous fisheries are analyzed in **Section 3.6**, Fishery Resources.

Susceptibility to erosion is controlled by several factors, including terrain, land use, vegetation, soil type, and local climate. A soil with high erodibility typically experiences more erosion than a soil with low erodibility. However, in the absence of an adverse condition (i.e., rainfall, lack of vegetation), a soil that is classified as highly erodible may not experience significant erosion. In general, significant soil erosion would occur only at locations with steep cuts or fills, where a combination of fine sandy to silty soils occurs, which are difficult to revegetate following ground disturbance. The Proposed Action bridge would be constructed predominantly within the existing alignment on the left side (four feet downstream), but 44 feet downstream of the existing alignment on the right side. Potential for erosion could be greater for bridge and roadway construction completed on the right side of the Trinity River.

Alternative 1 (Replacement Upstream, Private Ownership)

Similar to the Proposed Action, construction activities associated with Alternative 1 would result in the disturbance and loosening of soils and exposure to elements, increasing the potential for wind and water erosion. Increased wind and water erosion, and associated downstream sedimentation within the Trinity River, would occur if any soils were exposed during periods of high precipitation in late winter and early spring. Increased soil erosion and potential sedimentation is considered a significant impact.

The Alternative 1 bridge will be constructed upstream of the existing alignment. The potential for erosion and associated sedimentation of the Trinity River would be greater for Alternative 1 than for the Proposed Action due to the greater amount of earthwork associated with creation of new roadway approaches and a bridge in a new location.

Alternative 2 (Replacement Upstream, Public Ownership)

Similar to the Proposed Action, construction activities associated with Alternative 2 would result in the disturbance and loosening of soils and exposure to elements, increasing the potential for wind and water erosion. Increased wind and water erosion, and associated downstream sedimentation within the Trinity River, would occur if any soils were exposed during periods of high precipitation in late winter and early spring. Increased soil erosion and potential sedimentation is considered a significant impact.

The Alternative 2 bridge will be constructed upstream of the existing alignment. The potential for erosion and associated sedimentation of the Trinity River would be greater for Alternative 2 than for the Proposed Action due to the greater amount of earthwork associated with creation of new roadway approaches and a bridge in a new location. In addition, the Alternative 2 bridge would be 10 feet wider than the Proposed Action bridge and the Alternative 1 bridge. Construction of a wider bridge and access road structure could result in greater erosion and sedimentation impacts for Alternative 2 than for the Proposed Action or Alternative 2 bridges.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance After Mitigation: N/A.

Proposed Action; Alternative 1; Alternative 2

SF-2a: The BOR shall implement the following measures throughout construction:

- Areas where ground disturbance will need to occur shall be identified in advance of construction and limited to only those areas that have been approved by the BOR.
- Confine all construction vehicular traffic to the designated access routes and staging area.
- Limit disturbance to the minimum necessary to complete construction activities.
- Inform all supervisory construction personnel of environmental concerns, permit conditions, and final rehabilitation specifications.

SF-2b: The Contractor shall prepare an erosion and sedimentation control plan. The following measures shall be used as a guide to develop this plan:

- Restore disturbed areas to pre-construction contours to the extent feasible.
- Salvage, store, and use the highest quality soil for revegetation.
- Discourage noxious weed competition and control noxious weeds.
- Clear steep slopes immediately prior to scheduled construction.
- Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff.
- Cease topsoil-stripping activities during significantly wet or windy weather.
- For areas that require permanent erosion control structures, stepped footings or retaining walls designed to preserve the natural landforms should be used.
- Use bales and/or silt fencing as appropriate.
- Before seeding disturbed soils, work the topsoil to reduce compaction caused by construction vehicle traffic.
- Following completion of each stage of construction, weed-free mulch shall be applied to disturbed areas within 10 days in order to reduce the potential for short-term erosion. Prior to a rain event or when there is a greater than 50 percent possibility of rain forecasted by the National Weather Service during the next 24 hours, weed-free mulch shall be applied to all exposed areas upon completion of the day's activities. Soils shall not be left exposed during the rainy season.
- Filter fences and catch basins shall be placed below all construction activities at the edge of the Trinity River and other surface water features to intercept sediment before it reaches the waterway. These structures shall be installed prior to any clearing or grading activities.
- Spoil sites shall be located such that they do not drain directly into a surface water feature, if possible. If a spoil site drains into a surface water feature, catch basins shall be constructed to intercept sediment before it reaches the feature. Spoil sites shall be graded and vegetated to reduce the potential for erosion.
- Sediment control measures shall be in place prior to the onset of the rainy season and will be monitored and maintained in good working condition until disturbed areas have been revegetated.

Significance After Mitigation: *Less than Significant.*

Impact 3.3-3: Absent proper design, implementation of the proposed Project could be inconsistent with the goals, policies, and objectives of the Trinity County General Plan, as well as the local community plans, policies, and ordinances. Because the Project has been designed with all applicable goals, policies, and objectives in mind, however, no such inconsistencies exist. ***No Impact for the No-Action Alternative; Less than Significant for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, a new bridge would not be constructed at the Salt Flat site. Implementation of the No-Action Alternative would be inconsistent with the ten Trinity River healthy river attributes because the river cannot receive adequate water flows to achieve all ten attributes.

Proposed Action (Replacement Downstream, Private Ownership), Alternative 1 (Replacement Upstream, Private Ownership), Alternative 2 (Replacement Upstream, Public Ownership)

TABLE 3.3-2
CONSISTENCY WITH THE TRINITY RIVER HEALTHY RIVER ATTRIBUTES:
SALT FLAT PROPOSED ACTION AND PROJECT ALTERNATIVES

Attribute	Assessment of Consistency
1. Spatially complex channel geomorphology	Construction and implementation of any of the bridge alternatives would not significantly alter the Trinity River channel geomorphology. The Proposed Action, Alternative 1, and Alternative 2 are all consistent with Attribute 1.
2. Flows and water quality are predictably unpredictable	Construction and implementation of any of the bridge alternatives would not alter the predictability or variability of Trinity River flows. The Proposed Action, Alternative 1, and Alternative 2 are all consistent with Attribute 2 and will improve the local hydraulics at each site.
3. Frequently mobilized channelbed surface	Construction and implementation of any of the bridge alternatives would not significantly alter the mobility of the Trinity River channelbed surface. The Proposed Action, Alternative 1, and Alternative 2 are all consistent with Attribute 3.
4. Periodic channelbed scour and fill	Construction and implementation of any of the bridge alternatives would not alter the periodicity of Trinity River channelbed scour and fill. The Proposed Action, Alternative 1, and Alternative 2 are all consistent with Attribute 4.
5. Balanced fine and coarse sediment budgets	Construction and implementation of any of the bridge alternatives would not significantly alter the fine and coarse sediment budget of the Trinity River. The Proposed Action, Alternative 1, and Alternative 2 are all consistent with Attribute 5.
6. Periodic channel migration	Construction and implementation of any of the bridge alternatives would not significantly alter Trinity River channel migration. The Proposed Action, Alternative 1, and Alternative 2 are all consistent with Attribute 6.
7. A functional floodplain	Construction and implementation of any of the bridge alternatives would not alter the functionality of the Trinity River floodplain. The Proposed Action, Alternative 1, and Alternative 2 are all consistent with Attribute 7.
8. Infrequent channel resetting floods	Construction and implementation of any of the bridge alternatives would not alter the frequency of channel resetting floods in the Trinity River channel. The Proposed Action, Alternative 1, and Alternative 2 are all consistent with Attribute 8.
9. Self- sustaining diverse riparian plant community	Construction and implementation of any of the bridge alternatives would not alter the sustainability of the Trinity River riparian community. The Proposed Action, Alternative 1, and Alternative 2 are all consistent with Attribute 9.
10. Naturally fluctuating	Construction and implementation of any of the bridge alternatives would not alter the natural fluctuation of Trinity River groundwater. The Proposed Action, Alternative 1, and

TABLE 3.3-2
CONSISTENCY WITH THE TRINITY RIVER HEALTHY RIVER ATTRIBUTES:
SALT FLAT PROPOSED ACTION AND PROJECT ALTERNATIVES

Attribute	Assessment of Consistency
groundwater table	Alternative 2 are all consistent with Attribute 10.

Source: McBain and Trush (1997)

As noted in **Table 3.3-2** above, the Proposed Action, Alternative 1, and Alternative 2 would be consistent with the ten Trinity River healthy river attributes.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1; Alternative 2

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance After Mitigation: *N/A.*

Bucktail Bridge

Impact 3.3.1: Implementation of the proposed Project could result in the exposure of structures and people to geologic hazards including ground shaking and liquefaction. ***No Impact for No-Action Alternative; Less than Significant Impact for Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the west approach roadway and existing culvert will not be replaced at the Bucktail site. Under the No-Action Alternative, no potential geologic hazards or loss of mineral resources would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Although the Trinity County area historically has experienced low seismicity, moderate to strong ground shaking could occur following a large earthquake on one of the potentially active faults in the region. In the event of a significant earthquake, the roadway and culvert would be exposed to geologic hazards. The Proposed Action would not represent the introduction of a new geologic hazard since improvements to the existing roadway approach on the western side and the culvert would conform to Caltrans and AASHTO seismic standards.

Alternative 1 (Raise Existing Upstream Levee)

In the event of a significant earthquake, the levee and any people on it would be exposed to geologic hazards. This would not represent the introduction of a new geologic hazard, as the existing levee poses the same risk.

Mitigation Measures

No-Action Alternative, Proposed Action, Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance After Mitigation: *N/A.*

Impact 3.3-2: Construction activities associated with the proposed Project could potentially result in increased erosion and associated sedimentation of the Trinity River. ***No Impact for No-Action Alternative; Significant Impact for Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the west approach roadway and the existing culvert will not be replaced at the Bucktail site. No construction-related erosion or sedimentation of the Trinity River would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Construction activities associated with raising the west approach roadway and replacing the existing culvert (the Proposed Action) would result in the disturbance and loosening of soils and exposure to elements, increasing the potential for wind and water erosion. Increased wind and water erosion, and associated downstream sedimentation within the Trinity River, would occur if any soils were exposed during periods of high precipitation in late winter and early spring. Increased soil erosion and potential sedimentation is considered a significant impact. Impacts of turbidity levels specific to water quality degradation are analyzed in **Section 3.5**, Water Quality and associated impact to anadromous fisheries are analyzed in **Section 3.6**, Fishery Resources.

Susceptibility to erosion is controlled by several factors, including terrain, land use, vegetation, soil type, and local climate. A soil with high erodibility typically experiences more erosion than a soil with low erodibility. However, in the absence of an adverse condition (i.e., rainfall, lack of vegetation), a soil that is classified as highly erodible may not experience significant erosion. In general, significant soil erosion would occur only at locations with steep cuts or fills, where a combination of fine sandy to silty soils occurs, which are difficult to revegetate following ground disturbance.

Alternative 1 (Raise Existing Upstream Levee)

Similar to the Proposed Action, construction activities associated with raising the existing upstream levee (Alternative 1) would result in the disturbance and loosening of soils and exposure to elements, increasing the potential for wind and water erosion. Increased wind and water erosion, and associated downstream sedimentation within the Trinity River, would occur if any soils were exposed during periods of high precipitation in late winter and early spring. Increased soil erosion and potential sedimentation is considered a significant impact.

The potential for continued erosion and associated sedimentation of the Trinity River would be greater for Alternative 2 than for the Proposed Action due to the action of Trinity River flows on the new levee materials resulting from forcing all Trinity River flows to pass under the existing bridge.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance After Mitigation: N/A.

Proposed Action; Alternative 1

BT-2a: The BOR shall implement the following measures throughout construction:

- Areas where ground disturbance will need to occur shall be identified in advance of construction and limited to only those areas that have been approved by the BOR.
- Confine all construction vehicular traffic to the designated access routes and staging area.
- Limit disturbance to the minimum necessary to complete construction activities.
- Inform all supervisory construction personnel of environmental concerns, permit conditions, and final rehabilitation specifications.

BT-2b: Contractor shall prepare an erosion and sedimentation control plan in accordance with applicable permit requirements. The following measures shall be used as a guide to develop this plan:

- Restore disturbed areas to pre-construction contours to the extent feasible;
- Salvage, store, and use the highest quality soil for revegetation;
- Discourage noxious weed competition and control noxious weeds;
- Clear steep slopes immediately prior to scheduled construction;
- Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff;
- Cease topsoil stripping activities during significantly wet or windy weather;
- For areas that require permanent erosion control structures, stepped footings or retaining walls designed to preserve the natural landforms should be used;
- Use bales and/or silt fencing as appropriate;
- Before seeding disturbed soils, work the topsoil to reduce compaction caused by construction vehicle traffic;
- Following completion of each stage of construction, weed-free mulch shall be applied to disturbed areas within 10 days in order to reduce the potential for short-term erosion. Prior to a rain event or when there is a greater than 50 percent possibility of rain forecasted by the National Weather Service during the next 24 hours, weed-free mulch shall be applied to all exposed areas upon completion of the day's activities. Soils shall not be left exposed during the rainy season.
- Filter fences and catch basins shall be placed below all construction activities at the edge of the Trinity River and other surface water features to intercept sediment before it reaches the waterway. These structures shall be installed prior to any clearing or grading activities.
- Spoil sites shall be located such that they do not drain directly into a surface water feature, if possible. If a spoil site drains into a surface water feature, catch basins shall be constructed to intercept sediment before it reaches the feature. Spoil sites shall be graded and vegetated to reduce the potential for erosion.
- Sediment control measures shall be in place prior to the onset of the rainy season and will be monitored and maintained in good working condition until disturbed areas have been revegetated.

Significance After Mitigation: *Less than Significant.*

Impact 3.3-3: Absent proper design, implementation of the proposed Project could be inconsistent with the goals, policies, and objectives of the Trinity County General Plan, as well as the local community plans, policies, and ordinances. Because the Project has been designed with all applicable goals, policies, and objectives in mind, however, no such inconsistencies exist. ***No Impact for the No-Action Alternative; Less than Significant for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative the west approach roadway and the existing culvert will not be replaced at the Bucktail site. Implementation of the No-Action Alternative would be consistent with the Trinity River healthy river attributes.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

TABLE 3.3-3
CONSISTENCY WITH THE TRINITY RIVER HEALTHY RIVER ATTRIBUTES:
BUCKTAIL PROPOSED ACTION

Attribute	Assessment of Consistency
1. Spatially complex channel geomorphology	Construction and implementation of the Proposed Action would increase the complexity of the Trinity River channel geomorphology in the project area. The Proposed Action is consistent with Attribute 1.
2. Flows and water quality are predictably unpredictable	Construction and implementation of the Proposed Action would not alter the predictability or variability of Trinity River flows. The Proposed Action is consistent with Attribute 2.
3. Frequently mobilized channelbed surface	Construction and implementation of the Proposed Action would not significantly alter the mobility of the Trinity River channelbed surface. The Proposed Action is consistent with Attribute 3.
4. Periodic channelbed scour and fill	Construction and implementation of the Proposed Action would not alter the periodicity of Trinity River channelbed scour and fill. The Proposed Action is consistent with Attribute 4.
5. Balanced fine and coarse sediment budgets	Construction and implementation of the Proposed Action would not significantly alter the fine and coarse sediment budget of the Trinity River. The Proposed Action is consistent with Attribute 5.
6. Periodic channel migration	Construction and implementation of the Proposed Action would not significantly alter Trinity River channel migration. The Proposed Action is consistent with Attribute 6.
7. A functional floodplain	Construction and implementation of the Proposed Action would not alter the functionality of the Trinity River floodplain. The Proposed Action is consistent with Attribute 7.
8. Infrequent channel resetting floods	Construction and implementation of the Proposed Action would not alter the frequency of channel resetting floods in the Trinity River channel. The Proposed Action is consistent with Attribute 8.
9. Self- sustaining diverse riparian plant community	Construction and implementation of the Proposed Action would not alter the sustainability of the Trinity River riparian community. The Proposed Action is consistent with Attribute 9.
10. Naturally fluctuating groundwater table	Construction and implementation of the Proposed Action would not alter the natural fluctuation of Trinity River groundwater. The Proposed Action is consistent with Attribute 10.

Source: McBain and Trush (1997)

As noted in **Table 3.3-3** above, the Proposed Action would be consistent with the ten Trinity River healthy river attributes.

Alternative 1 (Raise Existing Upstream Levee)

TABLE 3.3-4
CONSISTENCY WITH THE TRINITY RIVER HEALTHY RIVER ATTRIBUTES:
BUCKTAIL ALTERNATIVE 1

Attribute	Assessment of Consistency
1. Spatially complex channel geomorphology	Construction and implementation of Alternative 1 would not significantly alter the Trinity River channel geomorphology. Alternative 1 is consistent with Attribute 1.
2. Flows and water quality are predictably unpredictable	Construction and implementation of Alternative 1 would not alter the Trinity River predictability or variability of Trinity River flows. Alternative 1 is consistent with Attribute 2.
3. Frequently mobilized channelbed surface	Construction and implementation of Alternative 1 would not significantly alter the mobility of the Trinity River channelbed surface. Alternative 1 is consistent with Attribute 3.
4. Periodic channelbed scour and fill	Construction and implementation of Alternative 1 would not alter the periodicity of Trinity River channelbed scour and fill. Alternative 1 is consistent with Attribute 4.
5. Balanced fine and coarse sediment budgets	Construction and implementation of Alternative 1 would not significantly alter the fine and coarse sediment budget of the Trinity River. Alternative 1 is consistent with Attribute 5.
6. Periodic channel migration	Construction and implementation of Alternative 1 would alter Trinity River channel migration at the Bucktail Bridge site. Raising the existing levee will force the Trinity River to flow under the existing bridge and into the west bank of the river. The action of forcing flows to the west could accelerate channel migration at this site, however the effects are expected to be localized and not transmitted downstream. Alternative 1 is consistent with Attribute 6.
7. A functional floodplain	Construction and implementation of Alternative 1 would alter the functionality of the Trinity River floodplain to the east of the levee for approximately 200 feet. Raising the levee would inhibit the Trinity River from utilizing the floodplains east of the levee and adjacent to the river. This alternative will affect a small component of the floodplain, but the effects are expected to localized and not transmitted downstream. Alternative 1 is potentially inconsistent with Attribute 7.
8. Infrequent channel resetting floods	Construction and implementation of Alternative 1 would not alter the frequency of channel resetting floods in the Trinity River channel. Alternative 1 is consistent with Attribute 8.
9. Self- sustaining diverse riparian plant community	Construction and implementation of Alternative 1 could alter the sustainability of the Trinity River riparian community located on the east side of the Trinity River at the Bucktail Bridge site. Raising the existing levee would block Trinity River flows from reaching the montane riparian habitat within the residential community of Bucktail subdivision. This alternative will affect a small component of the floodplain, but the effects are expected to localized and not transmitted downstream. Alternative 1 is potentially inconsistent with Attribute 9.
10. Naturally fluctuating groundwater table	Construction and implementation of Alternative 1 would not alter the natural fluctuation of Trinity River groundwater. Alternative 1 is consistent with Attribute 10.

Source: McBain and Trush (1997)

As noted in **Table 3.3-4** above, Alternative 1 would be consistent with seven of the ten Trinity River healthy river attributes and potentially inconsistent with Attributes 7 and 9.

Mitigation Measures

No-Action Alternative; Proposed Action, Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance After Mitigation: N/A.

Poker Bar Bridges

Impact 3.3.1: Implementation of the proposed Project could result in the exposure of structures and people to geologic hazards including ground shaking and liquefaction. ***No Impact for No-Action Alternative; Significant Impact for Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the new bridges would not be constructed at the Poker Bar site. No impacts associated with potential geologic hazards or loss of mineral resources would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures); Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Although the Trinity County area historically has experienced low seismicity, moderate to strong ground shaking could occur following a large earthquake on one of the potentially active faults in the region. In the event of a significant earthquake, the bridges and any people on or under it would be exposed to geologic hazards. Although this would not represent the introduction of a new geologic hazard, as the existing bridges pose the same risk, since a geotechnical engineering study has not been completed for the proposed project site, this impact would be potentially significant.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance After Mitigation: N/A.

Proposed Action; Alternative 1

PB-1a: Prior to final bridge design, BOR engineers shall identify potential engineering solutions to address construction on unstable materials. This may include one or more the following, as appropriate:

- Remove unstable fill before placement of widened bridge foundations and fill embankments.
- Extend foundations for bridge support columns through unstable materials into suitable dense materials (i.e., consolidated material, bedrock).
- Use rock bolting.

PB-1b: Final design of the bridges shall meet all Caltrans and AASHTO standard seismic construction and design code requirements to prevent collapse from and minimize structural damage from ground shaking and liquefaction.

Significance After Mitigation: *Less than Significant.*

Impact 3.3-2: Construction activities associated with the proposed Project could potentially result in increased erosion and associated sedimentation of the Trinity River. ***No Impact for No-Action Alternative; Less than Significant Impact or Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the new bridges would not be constructed at the Poker Bar site. No construction-related erosion or associated sedimentation of the Trinity River would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures); Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction activities associated with either of the bridge replacement alternatives (Proposed Action and Alternative 1) would result in the disturbance and loosening of soils and exposure to elements, increasing the potential for wind and water erosion. Increased wind and water erosion, and associated downstream sedimentation within the Trinity River, would occur if any soils were exposed during periods of high precipitation in late winter and early spring. Increased soil erosion and potential sedimentation is considered a significant impact. Impacts of turbidity levels specific to water quality degradation are analyzed in Section 3.5, Water Quality and associated impact to anadromous fisheries are analyzed in Section 3.6, Fishery Resources.

Susceptibility to erosion is controlled by several factors, including terrain, land use, vegetation, soil type, and local climate. A soil with high erodibility typically experiences more erosion than a soil with low erodibility. However, in the absence of an adverse condition (i.e., rainfall, lack of vegetation), a soil that is classified as highly erodible may not experience significant erosion. In general significant soil erosion would occur only at locations with steep cuts or fills, where a combination of fine sandy to silty soils occurs, which are difficult to revegetate following ground disturbance.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance After Mitigation: N/A.

Proposed Action; Alternative 1

PB-2a: The BOR shall implement the following measures throughout construction:

- Areas where ground disturbance will need to occur shall be identified in advance of construction and limited to only those areas that have been approved by the BOR.
- Confine all construction vehicular traffic to the designated access routes and staging area.
- Limit disturbance to the minimum necessary to complete construction activities.
- Inform all supervisory construction personnel of environmental concerns, permit conditions, and final rehabilitation specifications.

PB-2b: Contractor shall prepare an erosion and sedimentation control plan in accordance with applicable permit requirements. The following measures shall be used as a guide to develop this plan:

- Restore disturbed areas to pre-construction contours to the extent feasible;

- Salvage, store, and use the highest quality soil for revegetation;
- Discourage noxious weed competition and control noxious weeds;
- Clear steep slopes immediately prior to scheduled construction;
- Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff;
- Cease topsoil stripping activities during significantly wet or windy weather;
- For areas that require permanent erosion control structures, stepped footings or retaining walls designed to preserve the natural landforms should be used;
- Use bales and/or silt fencing as appropriate;
- Before seeding disturbed soils, work the topsoil to reduce compaction caused by construction vehicle traffic;
- Following completion of each stage of construction, weed-free mulch shall be applied to disturbed areas within 10 days in order to reduce the potential for short-term erosion. Prior to a rain event or when there is a greater than 50 percent possibility of rain forecasted by the National Weather Service during the next 24 hours, weed-free mulch shall be applied to all exposed areas upon completion of the day's activities. Soils shall not be left exposed during the rainy season.
- Filter fences and catch basins shall be placed below all construction activities at the edge of the Trinity River and other surface water features to intercept sediment before it reaches the waterway. These structures shall be installed prior to any clearing or grading activities.
- Spoil sites shall be located such that they do not drain directly into a surface water feature, if possible. If a spoil site drains into a surface water feature, catch basins shall be constructed to intercept sediment before it reaches the feature. Spoil sites shall be graded and vegetated to reduce the potential for erosion.
- Sediment control measures shall be in place prior to the onset of the rainy season and will be monitored and maintained in good working condition until disturbed areas have been revegetated.

Significance After Mitigation: *Less than Significant.*

Impact 3.3-3: Absent proper design, implementation of the proposed Project could be inconsistent with the goals, policies, and objectives of the Trinity County General Plan, as well as the local community plans, policies, and ordinances. Because the Project has been designed with all applicable goals, policies, and objectives in mind, however, no such inconsistencies exist. ***No Impact for the No-Action Alternative; Less than Significant for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the new bridges would not be constructed at the Poker Bar site. Implementation of the No-Action Alternative would be consistent with the Trinity River healthy river attributes.

Proposed Action (Replacement Upstream with Two Single-Span Structures); Alternative 1 (Replacement Downstream with Two Single-Span Structures)

TABLE 3.3-5
CONSISTENCY WITH THE TRINITY RIVER HEALTHY RIVER ATTRIBUTES:
POKER BAR PROPOSED ACTION AND ALTERNATIVE 1

Attribute	Assessment of Consistency
1. Spatially complex channel geomorphology	Construction and implementation of any of the bridge alternatives would not significantly alter the Trinity River channel geomorphology. The Proposed Action and Alternative 1 are consistent with Attribute 1.
2. Flows and water quality are predictably unpredictable	Construction and implementation of any of the bridge alternatives would not alter the Trinity River predictability or variability of Trinity River flows. The Proposed Action and Alternative 1 are consistent with Attribute 2.
3. Frequently mobilized channelbed surface	Construction and implementation of any of the bridge alternatives would not significantly alter the mobility of the Trinity River channelbed surface. The Proposed Action and Alternative 1 are consistent with Attribute 3.
4. Periodic channelbed scour and fill	Construction and implementation of any of the bridge alternatives would not alter the periodicity of Trinity River channelbed scour and fill. The Proposed Action and Alternative 1 are consistent with Attribute 4.
5. Balanced fine and coarse sediment budgets	Construction and implementation of any of the bridge alternatives would not significantly alter the fine and coarse sediment budget of the Trinity River. The Proposed Action and Alternative 1 are consistent with Attribute 5.
6. Periodic channel migration	Construction and implementation of any of the bridge alternatives would not significantly alter Trinity River channel migration. The Proposed Action and Alternative 1 are consistent with Attribute 6.
7. A functional floodplain	Construction and implementation of any of the bridge alternatives would not alter the functionality of the Trinity River floodplain. The Proposed Action and Alternative 1 are consistent with Attribute 7.

TABLE 3.3-5
CONSISTENCY WITH THE TRINITY RIVER HEALTHY RIVER ATTRIBUTES:
POKER BAR PROPOSED ACTION AND ALTERNATIVE 1

Attribute	Assessment of Consistency
8. Infrequent channel resetting floods	Construction and implementation of any of the bridge alternatives would not alter the frequency of channel resetting floods in the Trinity River channel. The Proposed Action and Alternative 1 are consistent with Attribute 8.
9. Self- sustaining diverse riparian plant	Construction and implementation of any of the bridge alternatives would not alter the sustainability of the Trinity River riparian community. The Proposed Action and Alternative 1 are consistent with Attribute 9.
10. Naturally fluctuating groundwater table	Construction and implementation of any of the bridge alternatives would not alter the natural fluctuation of Trinity River groundwater. The Proposed Action and Alternative 1 are consistent with Attribute 10.

Source: McBain and Trush (1997)

As noted in **Table 3.3-5** above, the Proposed Action and Alternative 1 would be consistent with the ten Trinity River healthy river attributes.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance After Mitigation: N/A.

Biggers Road Bridge

Impact 3.3.1: Implementation of the proposed Project could result in the exposure of structures and people to geologic hazards including ground shaking and liquefaction. ***No Impact for No-Action Alternative; Less than Significant Impact for Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, a new bridge would not be constructed at the Biggers Road site. No impacts associated with potential geologic hazards would occur.

Proposed Action (Replacement Upstream); Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Although the Trinity County area historically has experienced low seismicity, moderate to strong ground shaking could occur following a large earthquake on one of the potentially active faults in the region. In the event of a significant earthquake, the bridge and any people on or under it would be exposed to geologic hazards. Although this would not represent the introduction of a new geologic hazard, as the existing bridge poses the same risk, since a geotechnical engineering study has not been completed for the proposed project site, this impact would be potentially significant.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance After Mitigation: N/A.

Proposed Action; Alternative 1

BR-1a: Prior to final bridge design, BOR engineers shall identify potential engineering solutions to address construction on unstable materials. This may include one or more the following, as appropriate:

- Remove unstable fill before placement of widened bridge foundations and fill embankments.
- Extend foundations for bridge support columns through unstable materials into suitable dense materials (i.e., consolidated material, bedrock).
- Use rock bolting.

BR-1b: Final design of the bridge shall meet all Caltrans and AASHTO standard seismic construction and design code requirements to prevent collapse from and minimize structural damage from ground shaking and liquefaction.

Significance After Mitigation: *Less than Significant.*

Impact 3.3-2: Construction activities associated with the proposed Project could potentially result in increased erosion and associated sedimentation of the Trinity River. ***No Impact for No-Action Alternative; Less than Significant Impact for Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, a new bridge would not be constructed at the Biggers Road site. No construction-related erosion or sedimentation of the Trinity River would occur.

Proposed Action (Replacement Upstream)

Construction of new bridge upstream of the existing bridge (the Proposed Action) would result in the disturbance and loosening of soils and exposure to elements, increasing the potential for wind and water erosion. Increased wind and water erosion, and associated downstream sedimentation within the Trinity River, would occur if any soils were exposed during periods of high precipitation in late winter and early spring. Increased soil erosion and potential sedimentation is considered a significant impact. Impacts of turbidity levels specific to water quality degradation are analyzed in Section 3.5, Water Quality and associated impact to anadromous fisheries are analyzed in Section 3.6, Fishery Resources.

Susceptibility to erosion is controlled by several factors, including terrain, land use, vegetation, soil type, and local climate. A soil with high erodibility typically experiences more erosion than a soil with low erodibility. However, in the absence of an adverse condition (i.e., rainfall, lack of vegetation), a soil that is classified as highly erodible may not experience significant erosion. In general significant soil erosion would occur only at locations with steep cuts or fills, where a combination of fine sandy to silty soils occurs, which are difficult to revegetate following ground disturbance.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Similar to the Proposed Action, construction activities associated with Alternative 1 would result in the disturbance and loosening of soils and exposure to elements, increasing the potential for wind and water erosion. Increased wind and water erosion, and associated downstream sedimentation within the Trinity River, would occur if any soils were exposed during periods of high precipitation in late winter and early spring. Increased soil erosion and potential sedimentation is considered a significant impact.

Potential erosion and associated sedimentation impacts would be greater for Alternative 1 than for the Proposed Action. Under Alternative 1, the Steel Bridge Road roadway profile or vertical alignment would be raised approximately 4 feet and a retaining wall would be constructed on the riverside of Steel Bridge Road. The potential for erosion and associated sedimentation increases due to the greater amount of earthwork associated with raising the roadway and constructing the retaining wall.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance After Mitigation: N/A.

Proposed Action; Alternative 1

BR-2a: The BOR shall implement the following measures throughout construction:

- Areas where ground disturbance will need to occur shall be identified in advance of construction and limited to only those areas that have been approved by the BOR.
- Confine all construction vehicular traffic to the designated access routes and staging area.
- Limit disturbance to the minimum necessary to complete construction activities.
- Inform all supervisory construction personnel of environmental concerns, permit conditions, and final rehabilitation specifications.

BR-2b: Contractor shall prepare an erosion and sedimentation control plan in accordance with applicable permit requirements. The following measures shall be used as a guide to develop this plan:

- Restore disturbed areas to pre-construction contours to the extent feasible;
- Salvage, store, and use the highest quality soil for revegetation;
- Discourage noxious weed competition and control noxious weeds;
- Clear steep slopes immediately prior to scheduled construction;
- Leave drainage gaps in topsoil and spoil piles to accommodate surface water runoff;
- Cease topsoil stripping activities during significantly wet or windy weather;
- For areas that require permanent erosion control structures, stepped footings or retaining walls designed to preserve the natural landforms should be used;
- Use bales and/or silt fencing as appropriate;
- Before seeding disturbed soils, work the topsoil to reduce compaction caused by construction vehicle traffic;
- Following completion of each stage of construction, weed-free mulch shall be applied to disturbed areas within 10 days in order to reduce the potential for short-term erosion. Prior to a rain event or when there is a greater than 50 percent possibility of rain forecasted by the National Weather Service during the next 24 hours, weed-free mulch shall be applied to all exposed areas upon completion of the day's activities. Soils shall not be left exposed during the rainy season.
- Filter fences and catch basins shall be placed below all construction activities at the edge of the Trinity River and other surface water features to intercept sediment before it reaches the waterway. These structures shall be installed prior to any clearing or grading activities.
- Spoil sites shall be located such that they do not drain directly into a surface water feature, if possible. If a spoil site drains into a surface water feature, catch basins shall be constructed to intercept sediment before it reaches the feature. Spoil sites shall be graded and vegetated to reduce the potential for erosion.
- Sediment control measures shall be in place prior to the onset of the rainy season and will be monitored and maintained in good working condition until disturbed areas have been revegetated.

Significance After Mitigation: *Less than Significant.*

Impact 3.3-3: Absent proper design, implementation of the proposed Project could be inconsistent with the goals, policies, and objectives of the Trinity County General Plan, as well as the local community plans, policies, and ordinances. Because the Project has been designed with all applicable goals, policies, and objectives in mind, however, no such inconsistencies exist. ***No Impact for the No-Action Alternative; Less than Significant for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, a new bridge would not be constructed at the Biggers Road site. Implementation of the No-Action Alternative would be consistent with the Trinity River healthy river attributes.

Proposed Action (Replacement Upstream); Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

TABLE 3.3-6
CONSISTENCY WITH THE TRINITY RIVER HEALTHY RIVER ATTRIBUTES:
BIGGERS ROAD PROPOSED ACTION AND ALTERNATIVE 1

Attribute	Assessment of Consistency
1. Spatially complex channel geomorphology	Construction and implementation of any of the bridge alternatives would not significantly alter the Trinity River channel geomorphology. The Proposed Action and Alternative 1 are consistent with Attribute 1.
2. Flows and water quality are predictably unpredictable	Construction and implementation of any of the bridge alternatives would not alter the Trinity River predictability or variability of Trinity River flows. The Proposed Action and Alternative 1 are consistent with Attribute 2.
3. Frequently mobilized channelbed surface	Construction and implementation of any of the bridge alternatives would not significantly alter the mobility of the Trinity River channelbed surface. The Proposed Action and Alternative 1 are consistent with Attribute 3.
4. Periodic channelbed scour and fill	Construction and implementation of any of the bridge alternatives would not alter the periodicity of Trinity River channelbed scour and fill. The Proposed Action and Alternative 1 are consistent with Attribute 4.
5. Balanced fine and coarse sediment budgets	Construction and implementation of any of the bridge alternatives would not significantly alter the fine and coarse sediment budget of the Trinity River. The Proposed Action and Alternative 1 are consistent with Attribute 5.
6. Periodic channel migration	Construction and implementation of any of the bridge alternatives would not significantly alter Trinity River channel migration. The Proposed Action and Alternative 1 are consistent with Attribute 6.
7. A functional floodplain	Construction and implementation of any of the bridge alternatives would not alter the functionality of the Trinity River floodplain. The Proposed Action and Alternative 1 are consistent with Attribute 7.
8. Infrequent channel resetting floods	Construction and implementation of any of the bridge alternatives would not alter the frequency of channel resetting floods in the Trinity River channel. The Proposed Action and Alternative 1 are consistent with Attribute 8.
9. Self- sustaining diverse riparian plant	Construction and implementation of any of the bridge alternatives would not alter the sustainability of the Trinity River riparian community. The Proposed Action and Alternative 1 are consistent with Attribute 9.
10. Naturally fluctuating groundwater table	Construction and implementation of any of the bridge alternatives would not alter the natural fluctuation of Trinity River groundwater. The Proposed Action and Alternative 1 are consistent with Attribute 10.

Source: McBain and Trush (1997)

As noted in **Table 3.3-6** above, the Proposed Action and Alternative 1, and Alternative 2 would be consistent with the ten Trinity River healthy river attributes.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance After Mitigation: N/A.

SECTION 3.4

Water Resources

3.4 Water Resources

This section describes the surface water hydrology and groundwater from both regional and local perspectives, as well as site-specific location hydraulics associated with each bridge location. The following evaluation is based on review of existing literature and data and field reconnaissance to identify local water resource conditions, including private wells within the project study area. Geology, fluvial geomorphology, and soils issues are evaluated in **Section 3.3**. Fisheries issues are evaluated in **Section 3.6**, Fishery Resources.

3.4.1 Affected Environment/Environmental Setting

Regional Hydrology

Surface Water Hydrology

The TRD of the CVP primarily influences the regional hydrology. The local hydrology associated with each project site is subject to accretion flow from tributaries to the Trinity River (**Figure 3.4-1**). The Trinity River drains a watershed of approximately 2,965 square miles, about one-quarter of which is above Lewiston Dam. Elevations range from 8,888 feet msl at Sawtooth Mountain in the Trinity Alps to 300 feet msl at the confluence of the Trinity and Klamath Rivers. The climate is Mediterranean with an average precipitation of 62 inches per year; throughout the basin it varies from 30-70 inches annually, which typically occurs as rain in the lower elevations and snow at the higher elevations.

The Trinity River is the largest tributary to the Klamath River. The mainstem Trinity River flows a total of 170 miles from its headwaters to its confluence with Klamath River at Weitchpec, 43.5 miles upstream from the Pacific Ocean (**Figure 3.4-2**).

Construction on the Trinity River Diversion was commenced in 1957 and storage of Trinity River water was started in 1960. Operation of the Lewiston and Carr powerhouses commenced in April 1964. The TRD consists of a series of dams, tunnels, and power plants that export water from the Trinity River Basin into the Sacramento River Basin. Trinity and Lewiston Dams currently regulate Trinity River flows below RM 112. With a capacity of 2.48 million acre feet (maf), Trinity Reservoir is the largest component of the TRD. Releases from Trinity Reservoir are re-regulated in Lewiston Reservoir prior to release downstream into the Trinity River. Lewiston Reservoir also acts as a forebay for the trans-basin export of water into Whiskeytown Reservoir via the Clear Creek Tunnel. Lewiston Dam marks the upstream limit of anadromous salmonid access.

From 1962 to 1979, CVP diversions delivered nearly 90 percent of the Trinity River annual water yield (above Lewiston) into the Sacramento River for urban and agricultural use[1]. After 1979, river releases were increased from 110,000 to 340,000 afa, such that the diversion percentage was reduced to roughly seventy percent.

Prior to the completion of the TRD, flows in the Trinity River were highly variable, ranging from summer flows of 25 cfs to extreme winter events with instantaneous peak flows greater than 100,000 cfs. The maximum flow recorded at Lewiston was 71,600 cfs in 1955. Annual hydrographs typically followed a seasonal pattern of high winter and

[1] The percentage of the Trinity River diverted to the Central Valley Project is the percentage of total reservoir release, not the percentage of the inflow that is diverted.

spring flows followed by low summer and fall flows. Total annual flow volumes at Lewiston ranged from 0.27 to 2.7 maf, with an average of 1.2 maf.

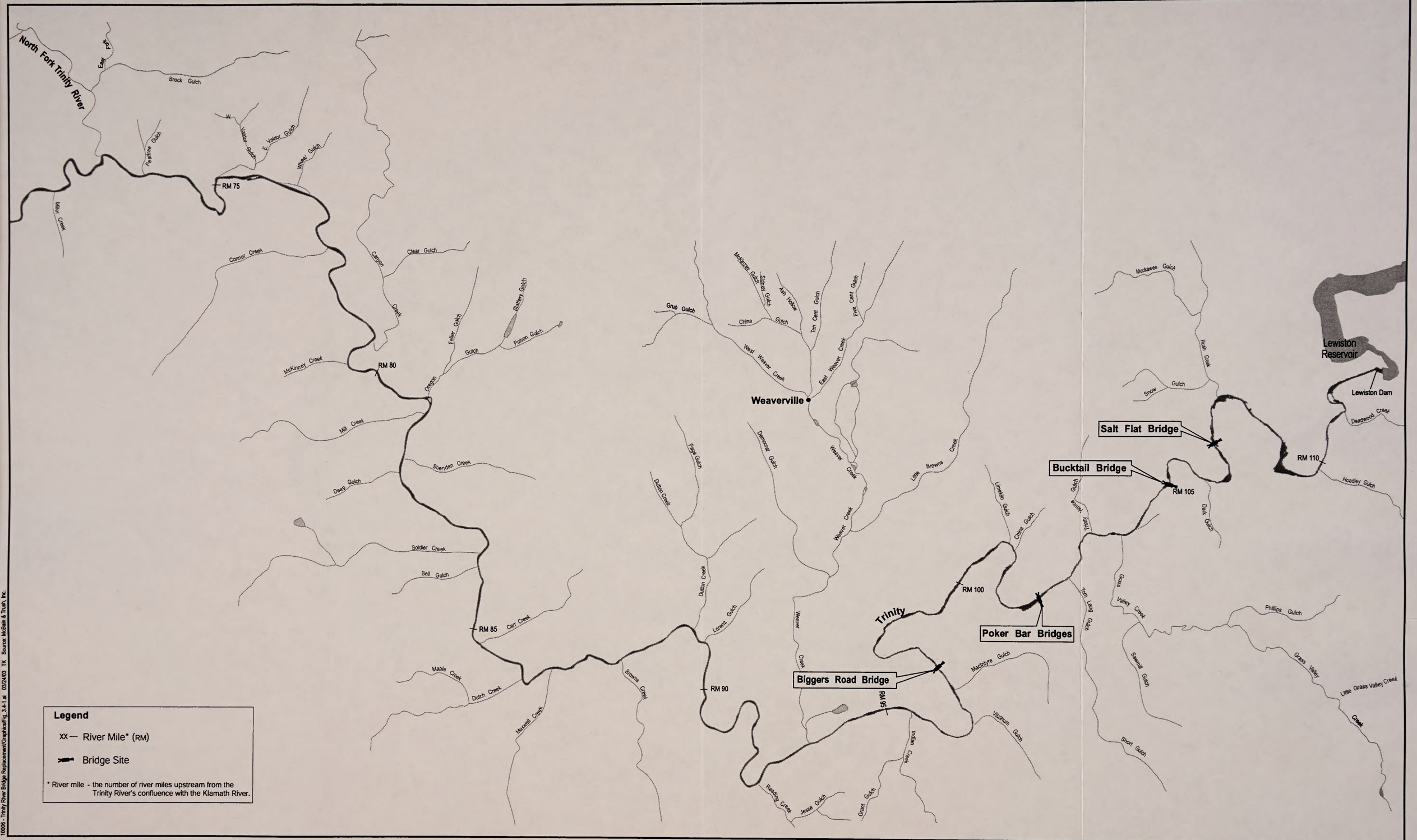
Since operation of the dam in 1964, an average of 74 percent of the river's flows has been exported annually, or about 988,000 acre-feet (af). In recent years (1985-1997), annual exports have decreased to an average of 732,400 af. Conversely, post-dam Trinity River flows at Lewiston have been as low as 121,500 afa (10 percent of pre-dam levels). Currently, releases to the Trinity River are dictated by the judgment entered by Judge Oliver Wanger in the federal court litigation described in **Section 1.1**. In critically dry years, the releases will total 368,500 afa, while in all other year types (dry, normal, wet, and extremely wet), the releases will total 452,600 afa. Former Secretary of Interior Babbitt's December 19, 2000, ROD had provided higher numbers for normal years (646,900 afa), wet years (701,000 afa), and extremely wet years (815,200 afa). It should be noted that flows are capped at dry and critically dry years and that 50,000 af of additional water will be made available this year to prevent a fish kill in the lower Klamath River. Whether these higher numbers will be reinstated depends on the outcome of the NEPA process associated with the new SEIS and ROD (see **Section 1.1**). According to the terms of the CVPIA, long-term flows cannot go lower, regardless of any new ROD, than 340,000 afa. Although releases of 340,000 to 452,600 afa represent significant increases compared with the releases made during the period starting in 1965 and ending in 1992, the higher flows still represent what, absent the TRD, would constitute drought conditions within the Trinity River. Based on records of pre-dam flows at Lewiston and post-dam inflow to Trinity Reservoir, 340,000 af approximates the third lowest flow since 1912.

When the BOR exceeds certain storage levels in Trinity Lake during the period November 1 through March 31 (**Table-3.4-1**), the BOR is required to release additional water from Trinity Dam to either the Trinity River or the Clear Creek Tunnel, according to Safety of Dams requirements. Though water could be released into the Trinity River from Lewiston Dam in excess of minimum fishery releases, these releases do not reduce the requirement to meet seasonally defined minimum fishery flows.

When considering increases to the Trinity River release, all meteorological and hydrological conditions should be considered. Under favorable circumstances, release changes should be scheduled to minimize downstream fluctuations in flow.

TABLE 3.4-1
TRINITY LAKE SAFETY OF DAMS CRITERIA
Full Pool is 2370' (2,448,000 af = Top of Glory Hole Spillway)

Target Date	Range of Reservoir Water Surface Elevations (ft)	Maximum Required Discharge (cfs)
11/1 to 3/31	2,330 and below	0
11/1 to 2/28	2,330 to 2,345	3,600
11/1 to 2/28	2,345 to 2,370	6,000
3/1 to 3/31	2,330.2 to 2,347	3,600
3/1 to 3/31	2,347 to 2,370	6,000
11/1 to 3/31	2,370 to 2,373.5	6,000 to 9,600

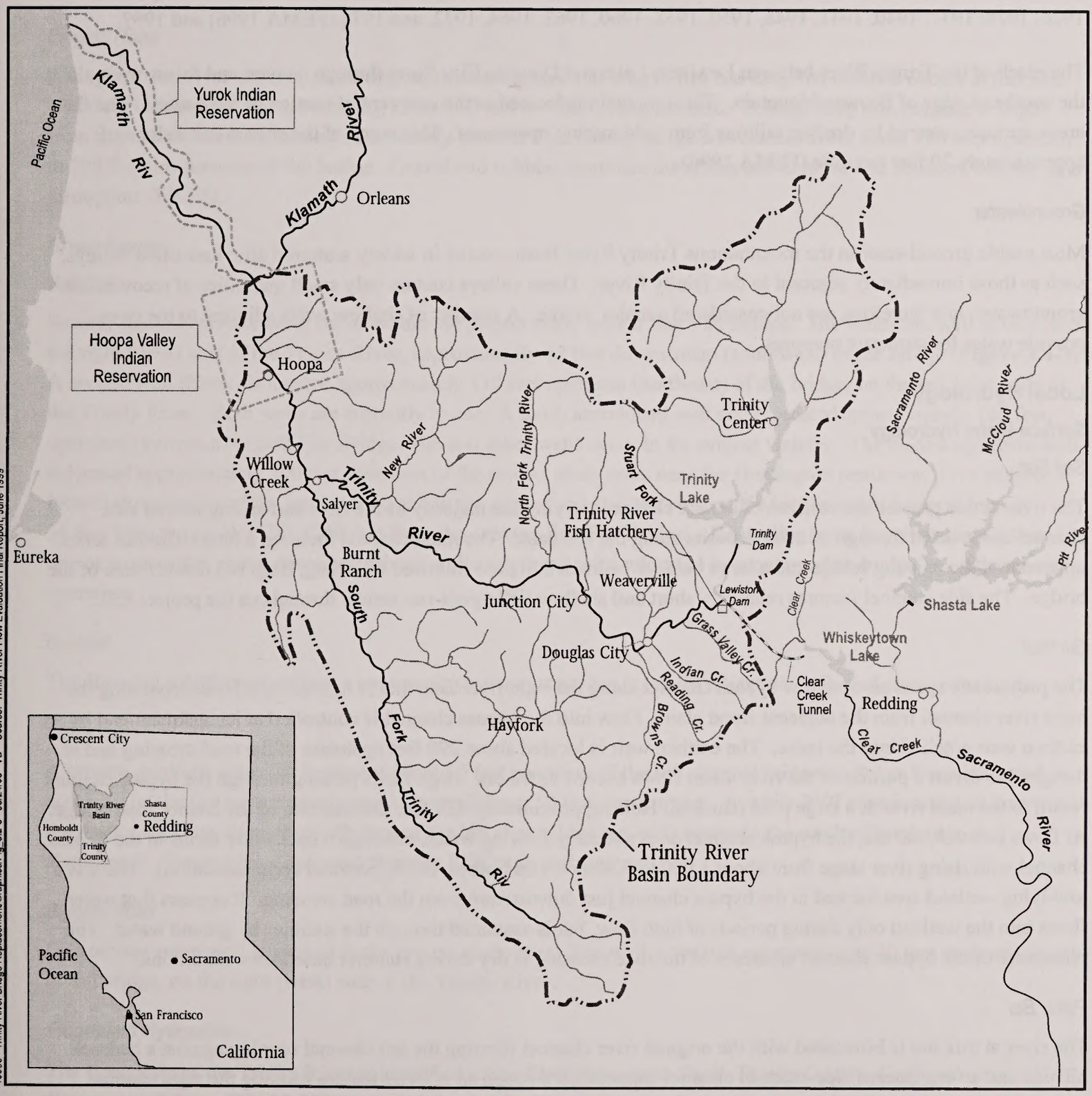


10006 - Trinity River Bridge Replacement\Graphics\Fig_3.4-1.ai 03/24/03 TK Source: McBain & Trush, Inc.

North State Resources, Inc.

Trinity River Bridges Project

Figure 3.4-1
Local Hydrology and Tributaries



10006 - Trinity River Bridge Replacement/Graphics/Fig. 3.2-3 03/24/03 VB Source: Trinity River Flow Evaluation Final Report, June 1999

Figure 3.4-2
Regional Hydrology

The flood season on the Trinity River usually lasts from October through April, when over 90 percent of the annual precipitation falls. Floods on the Trinity River are somewhat controlled by the dams upstream of Lewiston. The greatest flood recorded for the area occurred in December 1955. Floods have also been recorded for the years 1862, 1926, 1928, 1937, 1940, 1941, 1948, 1950, 1958, 1960, 1963, 1964, 1972, and 1974 (FEMA 1996) and 1997.

The reach of the Trinity River between Lewiston Lake and Douglas City flows through canyon and forest areas along the southeast edge of Browns Mountain. This mountain is located in the east central portion of the county. The flat areas are now covered by dredger tailings from gold mining operations. This reach of the stream has a slope of approximately 20 feet per mile (FEMA 1996).

Groundwater

Most usable groundwater in the mountainous Trinity River Basin occurs in widely scattered alluvium-filled valleys, such as those immediately adjacent to the Trinity River. These valleys contain only small quantities of recoverable groundwater, and therefore, are not considered a major source. A number of shallow wells adjacent to the river provide water for domestic purposes.

Local Hydrology

Surface Water Hydrology

Salt Flat

The river at this project site consists of a main channel carrying the majority of the flow and an engineered side channel constructed through alluvial deposits along the left bank. The main channel includes a long riffle-run series upstream of the existing bridge and a large boulder/bedrock and pool followed by a long, deep run downstream of the bridge. The side channel features relatively short and shallow riffle-pool-run series' throughout the project ESL.

Bucktail

The project site spans an overflow bypass channel along the right riverbank that is formed by a levee separating the main river channel from the adjacent flood plain. Flow into the bypass channel is controlled at its upstream end by an earthen weir notched into the levee. The earthen weir is located about 290 feet upstream of the road crossing and is designed to divert a portion of the river when flows exceed 6,000 cfs. High flows passing through the bypass channel return to the main river at a large pool (Bucktail Hole) approximately 420 feet downstream of the county road bridge. At flows below 8,000 cfs, the bypass channel does not carry flowing water, although a backwater forms in the bypass channel with rising river stage from about 1,000 to 8,000 cfs (Ed Solbos, BOR, personal communication). There is a low-lying wetland area located in the bypass channel just downstream from the road crossing. It appears that water flows into the wetland only during periods of high flow, but is sustained through the summer by ground water. The remainder of the bypass channel upstream of the road crossing is dry during summer base flows conditions.

Poker Bar

The river at this site is bifurcated with the original river channel forming the left channel running against a bedrock hillside and an engineered side-channel channel constructed through an alluvial feature forming the right channel. The left channel carries about two-thirds of the river flow, while the right side-channel carries about one-third of the river's flow. The sediment bar island formed between the channels is approximately 200 feet wide at the existing bridges. The left channel riffles are dominated by gravel and cobbles. The engineered right channel is composed

mostly of a gravel-cobble-small boulder bed, with gravel dominating in the riffles and cobbles and boulders in the flatwater sections. The pools formed beneath both the right- and left channel bridges are relatively deep, averaging about four feet in the right channel and 6.5 feet in the left channel.

Biggers Road

A single, broad river channel exhibiting an alternating series of long riffles and deep run habitats occurs at this site. The river is relatively wide, averaging about 110 feet in width along the ESL. A long, deep run, ranging in depth from three to five feet, is formed immediately beneath the existing bridge and extends from about 100 feet upstream to 200 feet downstream of the bridge. Gravel and cobbles dominate the riffles and cobbles and boulders bed the runs throughout this ESL.

Groundwater

Salt Flat

Several shallow, private wells occur within the project study area at Salt Flat Bridge. The Heinsohn well is located on the right (west) side of the Trinity River, approximately 62 feet downstream (southwest) of the bridge (**Figure 3.4-3**). A second well (Bonk) is located approximately 110 feet upstream (northeast) of the bridge, on the left (east) side of the Trinity River. Both wells are currently in use. A third, abandoned well site is located approximately 165 feet upstream (northeast) of Salt Flat Bridge. Several other wells occur in the project vicinity. The closest upstream well is located approximately 500 feet upstream of the project study area, near the Huntington residence. Five wells are located downstream of the project ESL and in the project vicinity, the closest of which is located approximately 39 feet from the project ESL (248 feet from the existing Salt Flat Bridge). Depending upon the alternative selected, one or more of the above-described private wells may need to be relocated to accommodate bridge construction and operation.

Bucktail

The Bucktail subdivision utilizes a community water system that is totally reliant on wells and storage facilities.

Poker Bar

A private drinking water tap is present about 50 feet upstream of the left channel bridge on Poker Bar island, and an access to intake fire suppression water is located about 50 feet downstream. A white PVC pipe is attached underneath the timber decking, along the north face of the left channel bridge, and crosses to the south of the bridge at abutment 2. Surveys have indicated that this PVC pipe is abandoned.

Biggers Road

One private sump well is located in the project study area. The well is located approximately 20 feet upstream (north) of the bridge, on the right (west) side of the Trinity River.

Floodplain Hydraulics

The floodplain of the Trinity River is identified in the *Flood Insurance Study, Trinity County, California and Incorporated Areas* (FEMA 1996). Actual floodplain designations are in the accompanying Flood Insurance Rate Maps (FIRM). The floodplain designations for the Trinity River in the project area were identified from a flood study

performed by the Corps in 1976 (*Flood Plain Information, Trinity River, Lewiston Lake to Junction City, Trinity County, California* [Corps 1976]).

Under Trinity County's Floodplain Management Ordinance, projects such as bridges are not to increase the 100-year flood elevations, otherwise known as the Base Flood Elevation (BFE) by more than 12 inches. The general concept of replacing existing bridges with higher and longer structures with fewer supports within the floodplain would be expected to have a positive impact on the BFE. At the level of engineering analysis associated with this document, all the bridge alternatives that include removal and replacement of the existing structures with new bridges would result in lowering or having no detrimental affects on the BFE in the project areas. Prior to issuance of a Floodplain Development Permit for a bridge, Trinity County must receive engineering data to certify that the project will not negatively affect the BFE by more than 12 inches.

3.4.2 Regulatory Framework

Federal

Federal Emergency Management Agency (FEMA)

Projects encroaching on a designated floodplain, as established by the FEMA, are required to prepare a Location Hydraulic Study to assess risk in compliance with Executive Order 11988. This study was prepared for the proposed project, and is included as **Appendix J**. The Federal Highway Program Manual and FEMA procedures set forth the breadth and specificity of the study. A Location Hydraulic Study evaluates and discusses risks and impacts of base floodplain encroachment. The purpose of the evaluation is to ensure that all projects avoid significant floodplain encroachments where practicable and minimize the impact of highway construction projects that adversely affect the base floodplain.

The County implements the FEMA National Flood Insurance Program (NFIP). As a measure to obtain lower flood insurance rates, the County agreed to prohibit any floodway increase of 100-year flood elevations. Projects requiring use permits must establish that they will not negatively affect flood elevations. Projects or structures that increase 100-year flood elevations must revise flood maps before construction can begin. Map revision requires detailed modeling analysis and notification of landholders that could be affected by the map revision.

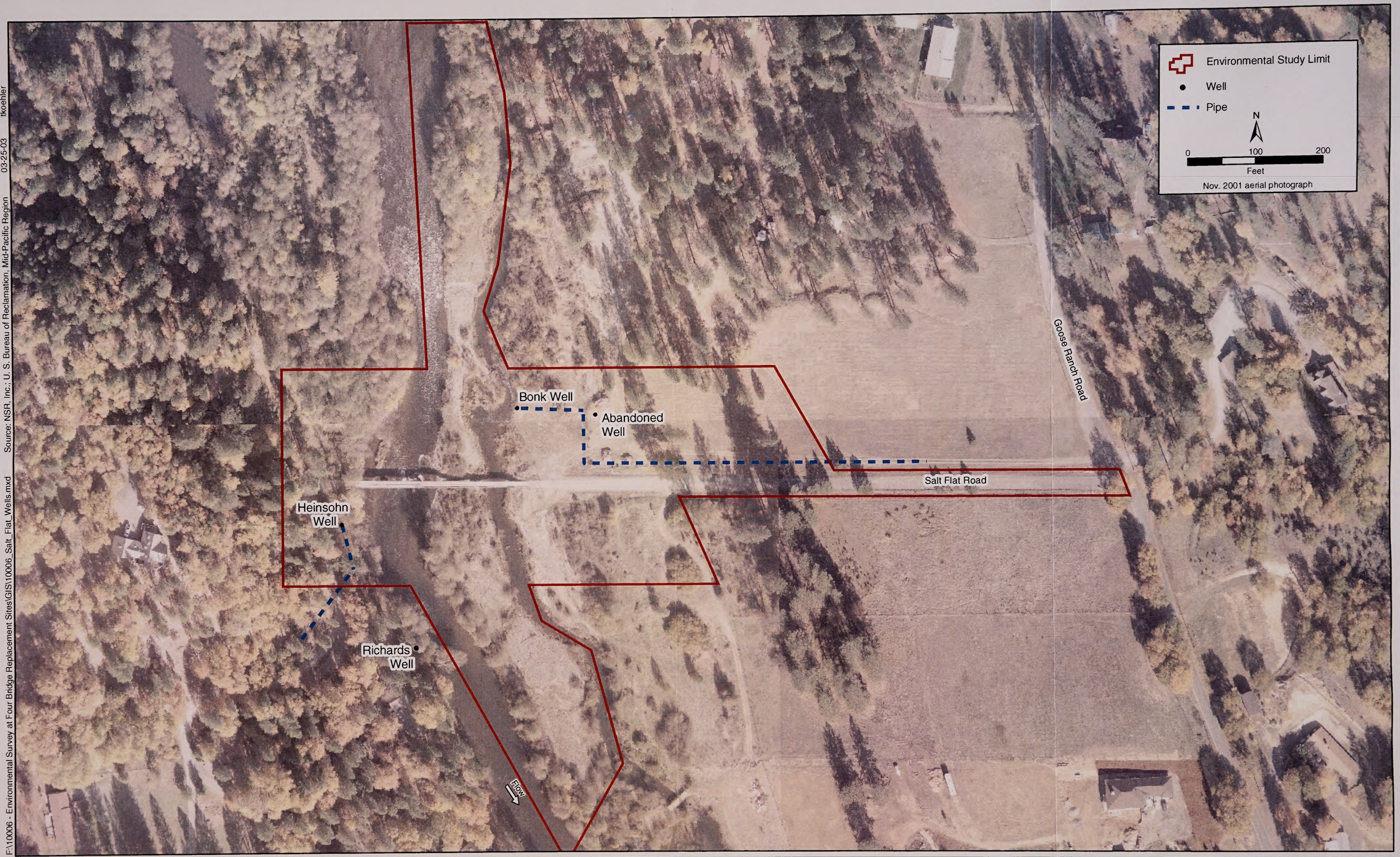
Federal Executive Order 11988 (Floodplain Encroachment)

The following eight-step decision-making process, as defined by the federal Water Resources Council for implementing Executive Order 11988, will need to be addressed by the BOR, BLM, and County as part of project approval. The status of each step is also provided.

Step 1: Determine if the proposed action is in the base floodplain. Any project alternative will encroach on the base floodplain of the Trinity River since piers and/or abutments will need to still be placed within the river channel. The bridge decks will be raised in elevation to improve conveyance of 100-year floodflows.

Step 2: Provide for public review. The hydraulic analysis prepared by the BOR for the Trinity River Bridges Project will be made available to the public during the review and comment period of the Draft EA/EIR.

Step 3: Identify and evaluate practicable alternatives to locating in the floodplain. No practicable alternatives exist that allow for a crossing of the Trinity River at any of the four bridge locations without encroaching into the



F:\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Salt_Flat_Wells.mxd Source: NSR, Inc.; U. S. Bureau of Reclamation, Mid-Pacific Region 03-25-03 tkoehler

Trinity River Bridges Project

North State Resources, Inc.

Figure 3.4-3
Salt Flat Private Well Locations

floodplain (e.g., excessive cost and engineering constraints associated with construction of single-span structures at Salt Flat and Biggers Road).

Step 4: Identify the impact of the proposed action. Environmental impacts of the proposed project alternatives are detailed in this EA/EIR.

Step 5: Minimize threats to life and property and to natural and beneficial floodplain values; restore and preserve natural and beneficial floodplain values. Impacts of the proposed project alternatives and recommended mitigation measures are presented in this EA/EIR. Implementation of the Proposed Action will minimize impacts to natural and beneficial floodplain values and will help to restore those values.

Step 6: Reevaluate alternatives. The preferred alternative will be reevaluated after public review and comment on the Draft EA/EIR.

Step 7: Issue findings and a public explanation. Findings will be published upon completion of the final EA/EIR.

Step 8: Implement the action. The project will be constructed after final environmental clearance has been received, all permits have been issued by responsible agencies, and financing has been secured.

Local

Trinity County Floodplain Management Ordinance

The Trinity County Floodplain Management Ordinance, found in Section 29.4 of the County Zoning Ordinance, requires a Floodplain Development Permit for projects that alter the Trinity River floodplain on private lands within the jurisdiction of Trinity County. The principal requirement of the permit is certification by a registered professional engineer or architect that construction or replacement of bridges, roadways, and bank slope protection devices will not adversely affect the flood-carrying capacity of any altered portion of the watercourse, and will not cumulatively raise the 100-year floodplain elevations by more than one foot in the project area. The Ordinance also requires notification of adjacent communities, the CDFG, the Corps, the NCRWQCB, and the DWR prior to any alteration or relocation of a watercourse, and the submission of evidence of such notification to the Federal Insurance Administration and the FEMA.

The Trinity County Floodplain Management Ordinance includes the following goals and policies:

Flood Hazard Zoning District

Applicability of FH Zoning District

All of the following area shall be zoned FH:

A. Areas designated as a Regulatory Floodway or Zone AE on FEMA's FIRMs;

B. Areas designated on the FIRM as Zone A along the Trinity River;

C. Areas identified as 100-year flood plain on parcel maps and final maps filed for record in accordance with the Trinity County Subdivision Ordinance;

D. Areas identified as 100-year flood plain in a use permit condition or other county entitlement; and

E. Areas identified as 100-year flood plain by a flood study approved by the County Board of Supervisors.

Uses Permitted

A. Agricultural uses not involving the construction of structures or other uses which would limit the flow of flood waters;

B. Placement and repair of three strand smooth-wire or barbed-wire fencing;

C. Maintenance and repair of existing bridges, culverts, and roadways;

D. Recreational mining or dredging, not subject to the Surface Mining and Reclamation Act (SMARA).

Uses Permitted Subject to First Securing a Floodplain Development Permit (per part 6.1 of this Section)

The following uses may be permitted subject to first securing a Director's Issued Floodplain Development Permit, and, where applicable, complying with Regulatory Floodway provisions of Section 2.5, below.

A. Construction of replacement of bridges, culverts, roadways, bank slope protection devices and levees, and fisheries or wildlife habitat improvement projects shall be allowed, provided a certification by a registered professional engineer is provided demonstrating that the net effect of the project, in conjunction with all other projects developed on the affected stream reach since the effective date of the FIRM for said stream, will not cumulatively increase flood waters of the stream by more than one foot in the project area. Such certification shall be provided to the Floodplain Administrator.

B. Substantial improvements to existing structures, subject to compliance with development standards in the FHO zoning district.

C. Development of structures within the FH zoning district may be permitted upon first securing Floodplain Development Permit, provided that there are no building sites lying outside of the FH zoning district. If approved, development shall comply with development standards in Section 3.4.

Uses Permitted in Regulatory Floodways

A "Regulatory Floodway," lying within an area of special flood hazard as shown on a FIRM, is an extremely hazardous area due to the velocity of floodwaters, which carry debris, potential projectiles, and erosion potential. The following provisions apply to Regulatory Floodways:

A. Encroachments, including fill, new construction, substantial improvement, and other new development are prohibited within floodways unless certification by a registered professional engineer is provided demonstrating that encroachments shall not result in any increase in [the base] flood elevation during the occurrence of the base flood discharge.

B. If Section 2.5A is satisfied, all new construction, substantial improvement, and other proposed new development shall comply with all other applicable flood hazard reduction provisions in Section 3.4.

C. If Section 2.5A cannot be satisfied, and the Floodplain Administrator determines that no practicable alternative exists to revising the boundaries of the previously adopted floodway, then the Floodplain Administrator may request an amendment to the floodway map, in compliance with 44 CFR Section 65.7, "Floodway Revisions."

Development Standards for Lands Lying Within the Flood Hazard (FH) Zoning District

Development standards for the allowable uses listed above for lands lying within the FH zoning district are the same as development standards for lands lying within the FHO zoning district (Section 3.4).

Flood Hazard Overlay Zoning District

Applicability of the FHO Zoning District

The following areas shall be zoned FHO:

- All of those lands as designated on FEMA's FIRMs as Zone AO or AH (areas of shallow flooding), or lands designated as Zone A that are not included in a FH zoning district.

Permitted Uses

All uses permitted in the underlying zone shall be permitted in the FHO district, provided that a Floodplain Development Permit shall be obtained prior to commencement of construction and issuance of any other county entitlement.

Development Standards for Lands Lying Within the FHO Zoning District

The following standards shall be applied to any development proposed within a FHO zoning district or within a special flood hazard area within which development is permitted by this ordinance.

A. Anchoring

1. All new construction and substantial improvements shall be anchored to prevent flotation, collapses, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, and certified by a registered professional architect or engineer.

B. Construction Materials and Methods

1. All new construction and substantial improvements shall be constructed with flood resistant materials as specified in FEMA Technical Bulletin TB 2-93, and utility equipment resistant to flood damage.
2. All new construction and substantial improvements shall be constructed using methods and practices that minimize flood damage.
3. All new construction and substantial improvements shall be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
4. All new construction and substantial improvements within zones AH or AO shall be constructed so that there are adequate drainage paths around structures on slopes to guide floodwaters around and away from proposed structures.

C. Elevation and Floodproofing

1. New construction and substantial improvement of any structure shall have the lowest floor, including basement:

   a. in an AO zone elevated above the highest adjacent grade to a height equal to or exceeding one foot above the depth number specified in feet on the FIRM, or elevated at least three feet above the highest grade if no depth number is specified; and

   b. in all other zones (AE, AH, and A 1-30), elevated not less than one foot above the base flood elevation. Nonresidential structures may meet the standards in Section 3.4.C.2.

2. Nonresidential construction shall be elevated in conformance with Section 3.4.C.1, or together with attendant utility and sanitary facilities

   a. be flood proofed so that below the elevation recommended under section 3.4.C.1, the structure is watertight with walls substantial impermeable to the passage of water;

   b. have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and

   c. be certified by a registered professional engineer or architect that the standards of the subsection are satisfied. Such certification shall be provided to the Floodplain Administrator.

D. Fill and Other Floodplain Encroachments

A registered professional engineer or architect shall certify that all fill and other encroachments do not increase the BFE more than 12 inches. Such certification shall be provided to the Floodplain Administrator.

Trinity County General Plan Goals and Objectives

The Trinity County General Plan contains goals and policies designed to guide the future physical development of the county, based on current conditions. The General Plan contains all the state-required elements, including community development and design, transportation, natural resources, health and safety, noise, housing, recreation, economic development, public facilities and services, and air quality. The following goals and policies, relative to water resources issues associated with the project study area, were taken from the applicable elements of the General Plan (County 2001). This includes the Lewiston Community Plan (County 1986) and the Douglas City Community Plan (County 1987).

County Wide Goals and Objectives

Safety Element

The following goals and objectives and policies are applicable to this project.

Flood Hazard Goal

Reduce loss of life and property by establishing development standards for areas subject to flooding.

- Require all development to meet federal, state and local regulations for floodplain management protection; including the encouragement of upgrading existing structures to meet adopted standards.
- Require all development to meet the development standards of the National Flood Insurance Act regulations in CFR Title 44, Section 60.3, as implemented through the County Zoning Ordinance section 29.4.
- Maintain or return to Open Space lands subject to flooding.

Lewiston Community Plan Goals and Objectives

This plan includes the area centered on the Trinity River from Lewiston Lake to slightly downstream of the confluence of Grass Valley Creek and the Trinity River. Project sites within the planning area include Salt Flat and Bucktail.

Hazards

Goal: To protect public and private developments from flood hazards

Douglas City Community Plan

This plan includes the area centered on the Trinity River from Grass Valley Creek to slightly downstream of Steiner Flat. Project sites within the planning area include Poker Bar and Biggers Road bridge sites.

Hazards

Goal: To protect public and private developments from flood hazards

Project Consistency with the Trinity County General Plan

As described in Chapter 1, Introduction, the proposed Project would:

- Provide safe and reasonable year-round access to parcels of land served by the Salt Flat, Bucktail, Poker Bar and Biggers Road bridges across the Trinity River.
- Allow dam operators maximum flexibility to provide instream flow releases from Lewiston Dam adequate to meet the fishery and geomorphic flow needs for the mainstem Trinity River and to fulfill the Trinity River TMDL for sediment and restore the coldwater fishery beneficial use.

The following project objectives apply to the project's lead/responsible agencies for CEQA purposes:

- Minimize the threat to public safety and potential damage to property posed by the existing high likelihood of flooding
- Provide maximum flexibility for implementing a variety of potential Trinity River fishery flow alternatives, as well as other flow alternatives outside the Record of Decision such as increasing dam releases during periods of high downstream tributary inflows
- Allow for high-efficiency sediment transport in the Trinity River to maximize the amount of sediment transported on a per acre-foot basis so that Trinity River can be removed from California's Clean Water Act Section 303(d) Impaired Waterbodies List, while minimizing the total amount of water necessary to transport sediment through the river system
- Provide maximum flexibility for operations of the TRD during periods of high runoff and flooding which could result in increased water in storage available for multiple beneficial uses (i.e., fisheries, recreation, water supply, water quality and power production)
- Provide alternative access on a short-term basis during project implementation
- Recovery of fish and wildlife resources that are listed as threatened and endangered

The following objectives apply to the projects responsible and trustee agencies, including the HVT, NCRWQCB, the SLC, the CDFG, and the SWRCB:

- Comply with the Water Code to ensure the highest reasonable quality of waters of the state and allocate those waters to achieve the optimum balance of beneficial uses
- Protect the public trust assets of the Trinity River watershed
- Protect, conserve, restore, and manage fish, wildlife, and native plant resources

- Comply with the Water Quality Control Plan for the Hoopa Valley Indian Reservation to preserve and enhance water quality on the Reservation, and to protect the beneficial uses of water.

These project objectives are consistent with the applicable general plan goals and policies summarized above.

3.4.3 Environmental Consequences/Impacts and Mitigation Measures

Methodology

Any structure constructed within the floodplain that poses an obstruction to flow will result in an increase in the BFE. The existing bridges at Salt Flat, Bucktail, Poker Bar, and Biggers Road, all obstruct Trinity River flood flows due to: (1) the constructed piers and abutments located within the flood channel; (2) the reforming of the upstream channel during construction to accommodate approach roads and improve bridge hydraulics, and; (3) in some cases the superstructure itself blocking flows which are too high to pass beneath the bridge unobstructed. All construction alternatives evaluated in this document would be designed to ensure that no increase in base flood elevation over what currently exists would occur.

Also, to reduce the risk of loss, injury or death of individuals using the bridges during high flow events, specific flood frequencies flows and corresponding water surface elevations were calculated for at each of the bridge sites. This was necessary due to the fact that specific hydrologic and hydraulic data was not available from the FEMA FIRM information at the exact bridge locations and also due to the age of the Corps 1976 study upon which the FEMA flood information is based. The *Hydraulic, Scour and Riprap Sizing Analysis* (**Appendix J**) prepared by the BOR (2003) has identified 100-year frequency flood flows based on additional hydrologic data and assuming the full implementation of the flow regime identified in the ROD (DOI 2000). In all cases these flood flows are higher and represent a more conservative bridge design approach than those that would be derived from the 1976 study.

To assess the sensitivity of the river to encroachment associated with the new bridges, the BOR performed hydraulic analyses for each location to simulate the potential effects of the proposed project (**Appendix J**). Parameters such as bridge location and number of piers were changed to simulate the effect on floodflows of potential bridge scenarios. The analysis was performed to assess the sensitivity of the river to encroachments, not to assess the feasibility of a specific design.

Significance Criteria

The project would result in a significant impact to hydraulics if one of the following conditions occurred:

- An increase in the base floodwater surface elevation of greater than one foot (12 inches);
- Substantial alteration of the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river, or a substantial increase in the rate or amount of surface runoff in a manner that would result in flooding on- or off-site; or
- Exposure of people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

The project would result in a significant impact to groundwater if one of the following conditions occurred:

- A long-term decline in groundwater elevations (or a net reduction in groundwater storage) due to interference with recharge;
- Detectable land subsidence;

- Violation of any water quality standards of waste discharge requirements intended to protect groundwater quality; or
- Detectable degradation of groundwater quality.

Groundwater impacts were assessed at the scale of a groundwater basin or sub-basin. The significance of declining (or increasing) water levels depends in part on the duration and permanence of the impact. Because groundwater elevations fluctuate naturally due to changes in rainfall, short-term changes in groundwater elevations were not considered significant.

Impacts and Mitigation Measures

Table 3.4-1 summarizes the potential water resources impacts resulting from construction and operation of the Trinity River Bridges Project.

TABLE 3.4-1
SUMMARY OF WATER RESOURCES IMPACTS FROM THE PROPOSED TRINITY RIVER BRIDGES PROJECT

Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Alternative 2
1. Implementation of the proposed Trinity River Bridges Project could result in a permanent increase in base floodwater surface elevation.	Salt Flat	NI	NI	NI	NI
	Bucktail	NI	NI	NI	N/A
	Poker Bar	NI	NI	NI	N/A
	Biggers Road	NI	NI	NI	N/A
2. Construction activities associated with the Trinity River Bridges Project could result in a temporary increase in base floodwater surface elevation.	Salt Flat	NI	S	S	S
	Bucktail	NI	LS	S	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A
3. Construction and implementation of the Trinity River Bridge Project may result in the relocation of one or more private wells.	Salt Flat	NI	S	S	S
	Bucktail	NI	NI	NI	N/A
	Poker Bar	NI	NI	NI	N/A
	Biggers Road	NI	NI	NI	N/A

Notes:
LS = Less than Significant S = Significant NI = No Impact SU = Significant Unavoidable
N/A = Not Applicable

Salt Flat Bridge

Impact 3.4-1: Implementation of the proposed Trinity River Bridges Project could result in a permanent increase in base floodwater surface elevation. ***No Impact for the No-Action Alternative; Less than Significant for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, the Trinity River floodplain within the project action area would not be altered and existing base floodwater surface elevations would remain the same because a new bridge would not be constructed at the Salt Flat site. While no permanent impacts to the floodplain would occur, the beneficial effects of the Proposed Action (i.e., reduction in total channel piers from three to one) would not be realized. Under current conditions, the existing bridge structure can adequately convey flows up to 7,750 cfs, at which point flows will back up behind the bridge structure.

Proposed Action (Replacement Downstream, Private Ownership)

Implementation of the Proposed Action will result in fewer bridge piers in the Trinity River channel, as described in Chapter 2, Description of Proposed Action and Alternatives. The existing bridge structure has a total of three piers, all of which are located within the typical low-flow channel. The new bridge will have a total of one pier, which will be constructed on the mid-channel bar above the active low flow channel. The left abutment engineered fill slope and rip-rap will extend below the active low-flow water surface elevation and approximately six feet below the existing channel depth for approximately 60 feet along/near the right channel bank. However, with the elimination of three piers from the Trinity River low-flow channel the bridge structure will be able to pass all current flows more efficiently than the existing bridge structure. In addition, the increased span length associated with the Proposed Action bridge will provide a wider flow area under the bridge, reducing the backwater surface elevations and water velocities. This will result in a more natural condition than the existing constricted channel.

Although the proposed project is located within a reach of the Trinity River floodplain mapped by FEMA, implementation of the Proposed Action will not result in an increase in the FEMA Base Flood water surface elevations. Water surface elevation will decrease slightly (several inches = within accuracy of the hydraulic modeling) with implementation. Therefore, implementation of the Proposed Action will not result in a significant impact to adjacent structures by increased flood risk.

Alternative 1 (Replacement Upstream, Private Ownership)

Changes in base floodwater surface elevation associated with Alternative 1 are similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Changes in base floodwater surface elevation associated with Alternative 2 are similar to the Proposed Action.

Mitigation Measures

No-Action Alternative, Proposed Action, Alternative 1, and Alternative 2

Since no significant impacts were identified, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.4-2: Construction activities associated with the Trinity River Bridges Project could result in a temporary increase in base floodwater surface elevation. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, the Trinity River floodplain within the project action area would not be altered and existing base floodwater surface elevations would remain the same because a new bridge would not be constructed at the Salt Flat site. No temporary impacts to the floodplain would occur.

Proposed Action (Replacement Downstream, Private Ownership)

As described in Chapter 2.0, Description of Proposed Action and Alternatives, construction of the Proposed Action at Salt Flat would include a temporary crossing over the left (east) channel of the Trinity River. The temporary crossing will be constructed by placing and contouring spawning gravel in the channel to provide an adequate base for

placement of steel landing mats (similar to temporary military runway matting). The mats will be placed flush to the channel bottom, approximately one foot below the low-flow water surface elevation and will extend up the channel banks to an elevation providing approximately three feet of freeboard above the low-flow water surface elevation. The mats will remain in place until removed during the subsequent in-channel construction season. In addition, a working platform with an area 35-foot wide by 55-foot long (+/- 1900 ft^2) will be needed for equipment setup and access for bent construction, and may be constructed using road base material, gravel, or other suitable material. Construction of the temporary crossing may necessitate use of an excavator and a dozer, and dump trucks may be used to transport material for construction of the platform. Construction of the left abutment engineered fill slope will also require work within the channel near the right bank.

As specified in the mitigation measures for water quality and fishery resources, construction work in the active low-flow channel is limited to the period between June 15th and September 15th, which is the dry season in this region. The exception would be at Salt Flat, where construction of the right abutment and the single column bent is planned for completion within the active low-flow channel during the fall and winter of 2003-2004 (outside of the June 15 to September 15 dry season in-river construction period). Any construction-related increase in base floodwater surface elevation that will take place during the June 15th to September 15th window (or fall/winter of 2003-2004 in first year of construction) would be considered less than significant due to the extremely low risk of flooding. It is assumed that all temporary facilities placed within the river channel will be removed from the floodplain prior to the onset of the flood season.

Alternative 1 (Replacement Upstream, Private Ownership)

Temporary changes in base floodwater surface elevation associated with Alternative 1 are similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Temporary changes in base floodwater surface elevation associated with Alternative 2 are similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action, Alternative 1, and Alternative 2

SF-2a: Any construction activities proposed within the active low-flow channel elevation of the Trinity River (excluding passive vegetation removal activities above ground level) shall be restricted to June 15th to September 15th, except for the first construction season, when in-water work will take place during the fall and winter of 2003-2004 (outside of the June 15 to September 15 dry season in-river construction period).

SF-2b: Construction equipment and materials shall be stored away from surface water features when not in use.

Significance after Mitigation: *Less than Significant.*

Impact 3.4-3: Construction and implementation of the Trinity River Bridges Project may necessitate the relocation of one or more private wells. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, a new bridge would not be constructed at the Salt Flat site; therefore, private wells would not need to be relocated.

Proposed Action (Replacement Downstream, Private Ownership)

Under the Proposed Action, the existing well located near the right bridge abutment will be relocated downstream beyond the abutment footprint and construction limit. Portions of the private service water line located along the north edge of Salt Flat Road may also need to be relocated. This impact was previously addressed in **Section 3.2**, Land Use. Construction of the proposed project would not reduce the available quantity of local groundwater, nor would it degrade the water quality conditions of the local groundwater table.

Alternative 1 (Replacement Upstream, Private Ownership)

Under Alternative 1, the private well and associated service line along the north edge of Salt Flat Road (Bonk) may need to be relocated. This impact was previously addressed in **Section 3.2**, Land Use. Construction of the proposed project would not reduce the available quantity of local groundwater, nor would it degrade the water quality conditions of the local groundwater table.

Alternative 2 (Replacement Upstream, Public Ownership)

Under Alternative 2, the private well and associated service line along the north edge of Salt Flat Road (Bonk) may need to be relocated. This impact was previously addressed in **Section 3.2**, Land Use.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

Implement Mitigation Measures (Proposed Action, Alternative 1) SF-1a-1d from **Section 3.2**, Land Use.

Significance After Mitigation: *Less than Significant.*

Alternative 2

Implement Mitigation Measures (Alternative 2) SF-1a-1d from **Section 3.2**, Land Use.

Significance After Mitigation: *Less than Significant.*

Bucktail Bridge

Impact 3.4-1: Implementation of the proposed Trinity River Bridges Project could result in a permanent increase in base floodwater surface elevation. ***No Impact for the No-Action Alternative; Less than Significant for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the Trinity River floodplain within the project action area would not be altered and existing base floodwater surface elevation would remain the same because the west approach roadway and the existing culvert will not be replaced at the Bucktail site. While no permanent impacts to the floodplain would occur, the beneficial effects of the Proposed Action would not be realized. Under current conditions, Bucktail Bridge can adequately convey flows up to 16,5000 cfs, but the western (right) road approach overtops at flows exceeding 7,800 cfs.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Raising the west approach roadway and replacing the existing 30-inch diameter culvert with a 9-foot wide by 4-foot high natural bottomed arch structure (the Proposed Action) will increase the conveyance of flows under the Browns Mountain Road embankment. This will result in a more natural condition than currently exists at the Bucktail site. Currently, the flow contraction at the bridge section causes a local water surface draw down. Flow passing under the bridge low chord may overtop the road above the culvert, resulting in a weir flow condition.

Although the proposed project is located within a reach of the Trinity River floodplain mapped by FEMA, implementation of the Proposed Action will not result in an increase in the FEMA Base Flood water surface elevations. Water surface elevation will decrease slightly (several inches = within accuracy of the hydraulic modeling) with implementation. Therefore, implementation of the Proposed Action will not result in a significant impact to adjacent structures by increased flood risk.

Alternative 1 (Raise Existing Upstream Levee)

Raising the existing upstream levee on the right bank of the Trinity River (Alternative 1) would force river flows under the existing Bucktail Bridge structure. Under this scenario, the existing bridge will provide approximately 1.0 foot of freeboard for Q_{100} (13,100 cfs) at the low chord (right abutment). For a flow of 15,000 cfs, the water surface elevation is approximately 0.1 foot below the low chord of the existing bridge. Water surface elevation will decrease slightly (several inches = within accuracy of the hydraulic modeling) with implementation. Therefore, implementation of Alternative 1 will not result in a significant impact to adjacent structures by increased flood risk.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.4-2: Construction activities associated with the Trinity River Bridges Project could result in a temporary increase in base floodwater surface elevation. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the Trinity River floodplain within the project action area would not be altered and existing base floodwater surface elevations would remain the same because the west approach roadway and the existing culvert will not be replaced at the Bucktail site. No temporary impacts to the floodplain would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

The Proposed Action does not require any work within the active low-flow channel. A detour around the existing road and culvert will be constructed outside of the active low-flow channel, but within the active floodplain of the Trinity River. The detour will be located north of the existing road and will be in operation for approximately 8 weeks. All construction activities would be completed prior to September 15th and no significant, temporary increase in base floodwater elevations would occur.

Alternative 1 (Raise Existing Upstream Levee)

Under Alternative 1, rip-rap will be placed on the river side of the upstream levee, within the active low flow channel. As specified in the mitigation measures for water quality and fishery resources, construction work in the active low-flow channel is limited to the period between June 15th and September 15th, which is the dry season in this region. Any construction-related increase in base floodwater surface elevation that will take place during the June 15th to September 15th window would be considered less than significant due to the extremely low risk of flooding. Any temporary facilities placed within the river channel will be removed from the floodplain prior to the onset of the flood season. Any construction activity that will take place in the active low-flow channel outside of the June 15th to September 15th window would be considered significant, and mitigation would be required.

Mitigation Measures

No-Action Alternative; Proposed Action, Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.4-3: Construction and implementation of the Trinity River Bridges Project may necessitate the relocation of one or more private wells. ***No Impact for the No-Action Alternative, Proposed Action, and Alternative 1.***

No-Action Alternative

No private wells are located within the project study limits at the Bucktail site. There will be no impact to private wells resulting from implementation of the No-Action Alternative.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

No private wells are located within the project study limits at the Bucktail site. Thus, there will be no impact to private wells and local groundwater conditions resulting from implementation of the Proposed Action.

Alternative 1 (Raise Existing Upstream Levee)

No private wells are located within the project study limits at the Bucktail site. Thus, there will be no impact to private wells and local groundwater conditions resulting from implementation of Alternative 1.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Poker Bar Bridges

Impact 3.4-1: Implementation of the proposed Trinity River Bridges Project could result in a permanent increase in base floodwater surface elevation. ***No Impact for the No-Action Alternative; Less than Significant for the Proposed Action, and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the Trinity River floodplain within the project action area would not be altered and existing base floodwater surface elevations would remain the same because new bridges would not be constructed at the Poker Bar site. While no permanent impacts to the floodplain would occur, the beneficial effects of the Proposed Action would not be realized. Under current conditions, the existing bridge structure can adequately convey flows up to 11,500 cfs, at which point flows will back up behind the bridge structures.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Under the Proposed Action, the two single-span bridges to be constructed upstream of the existing structure will have longer spans than currently exist at the Poker Bar site, and bridge abutments will be located outside of the low-flow active channel of the Trinity River. The Proposed Action structures will provide for a wider flow area under the bridges that will reduce the backwater elevation and water velocities. This will result in a more natural condition than the existing constricted left channel.

Although the proposed project is located within a reach of the Trinity River floodplain mapped by FEMA, implementation of the Proposed Action will not result in an increase in the FEMA Base Flood water surface elevations. Water surface elevation will decrease slightly (several inches = within accuracy of the hydraulic modeling) with implementation. Therefore, implementation of the Proposed Action will not result in a significant impact to adjacent structures by increased flood risk.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Changes in base floodwater surface elevation associated with Alternative 1 are similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.4-2: Construction activities associated with the Trinity River Bridges Project could result in a temporary increase in base floodwater surface elevation. ***No Impact for the No-Action Alternative, Less than Significant Impact for the Proposed Action, and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the Trinity River floodplain within the project action area would not be altered and existing base floodwater surface elevations would remain the same because new bridges would not be constructed at the Poker Bar site. No temporary impacts to the floodplain would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

The only construction activity proposed within the active low-flow channel of the Trinity River under the Proposed Action is the removal of the old bridge abutments, which would likely occur the summer after the new bridges have been constructed. This in-channel demolition work will be limited to the period between June 15th and September 15th, which is the dry season in this region. Any construction-related increase in base floodwater surface elevation that will take place during the June 15th to September 15th window would be considered less than significant due to the extremely low risk of flooding. It is assumed that any temporary facilities placed within the river channel will be removed from the floodplain prior to the onset of the flood season.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Temporary changes in base floodwater surface elevation associated with Alternative 1 are similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.4-3: Construction and implementation of the Trinity River Bridges Project may necessitate the relocation of one or more private wells. ***No Impact for the No-Action Alternative, Proposed Action, and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, new bridges would not be constructed at the Poker Bar site; therefore, the private drinking water tap and access to intake fire suppression water located near the existing bridge structures would not need to be relocated.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

The private drinking water tap and access to intake fire suppression water located near the existing bridge structures will not be impacted by construction or implementation of the Proposed Action. Construction of the proposed project would not reduce the available quantity of local groundwater, nor would it degrade the water quality conditions of the local groundwater table.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

The private drinking water tap and access to intake fire suppression water located near the existing bridge structures will not be impacted by construction or implementation of Alternative 1. Construction of the proposed project would

not reduce the available quantity of local groundwater, nor would it degrade the water quality conditions of the local groundwater table.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Biggers Road Bridge

Impact 3.4-1: Implementation of the proposed Trinity River Bridges Project could result in a permanent increase in base floodwater surface elevation. ***No Impact for the No-Action Alternative; Less than Significant for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the Trinity River floodplain within the project action area would not be altered and existing base floodwater surface elevations would remain the same because a new bridge would not be constructed at the Biggers Road site. While no permanent impacts to the floodplain would occur, the beneficial effects of the Proposed Action (i.e., reduction in total channel piers from three to one) would not be realized. Under current conditions, the existing bridge structure can adequately convey flows up to 9,000 cfs, at which point flows will back up behind the bridge structure.

Proposed Action (Replacement Upstream)

As described in Chapter 2.0, Description of Proposed Action and Alternatives, the Proposed Action consists of a two-span bridge designed for overtopping on the left (east) side, near the intersection of the bridge and Steel Bridge Road. The single column pier and bridge abutments will be located outside of the low-flow active channel of the Trinity River. The existing bridge structure has a total of three piers, two of which are located within the typical low-flow channel. With the elimination of two piers from the Trinity River low-flow channel, the proposed bridge structure will be able to pass low flows more efficiently than the existing bridge structure.

Although the proposed project is located within a reach of the Trinity River floodplain mapped by FEMA, implementation of the Proposed Action will not result in an increase in the FEMA Base Flood water surface elevations. Water surface elevation will decrease slightly (several inches = within accuracy of the hydraulic modeling) with implementation. Therefore, implementation of the Proposed Action will not result in a significant impact to adjacent structures by increased flood risk.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Implementation of Alternative 1 will result in fewer bridge piers in the Trinity River channel, as described in Chapter 2, Description of Proposed Action and Alternatives. The existing bridge structure has a total of three piers, two of which are located within the typical low-flow channel. The single pier and abutments of the Alternative 1 bridge structure will be constructed outside of the low-flow active channel of the Trinity River. The longer spans associated with the Alternative 1 structure will provide for a wider flow area under the bridge that will reduce the

backwater elevation and water velocities. The left abutment engineered fill slope and rip-rap will extend below the active low-flow water surface elevation and approximately six feet below the existing channel depth for approximately 60 feet along/near the right channel bank. However, with the elimination of three piers from the Trinity River low-flow channel the bridge structure will be able to pass all current flows more efficiently than the existing bridge structure. In addition, the increased span length associated with the Proposed Action bridge will provide a wider flow area under the bridge, reducing the backwater surface elevations and water velocities. This will result in a more natural condition than the existing constricted channel.

Although the proposed project is located within a reach of the Trinity River floodplain mapped by FEMA, implementation of the Proposed Action will not result in an increase in the FEMA Base Flood water surface elevations. Water surface elevation will decrease slightly (several inches = within accuracy of the hydraulic modeling) with implementation. Therefore, implementation of the Proposed Action will not result in a significant impact to adjacent structures by increased flood risk.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.4-2: Construction activities associated with the Trinity River Bridges Project could result in a temporary increase in base floodwater surface elevation. ***No Impact for the No-Action Alternative; Less than Significant Impact for Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the Trinity River floodplain within the project action area would not be altered and existing base floodwater surface elevations would remain the same because a new bridge would not be constructed at the Biggers Road site. No temporary impacts to the floodplain would occur.

Proposed Action (Replacement Upstream)

Although construction of the new bent for the Proposed Action is proposed outside of the active low-flow channel of the Trinity River, it would still be located within the floodplain of the Trinity River. A 960 ft^2 gravel work platform would need to be created for equipment setup and access for bent construction. Construction work associated with the bent is limited to the period between June 15th and September 15th, which is the dry season in this region, to avoid/minimize effects to fishery resources and water quality.

Demolition of the old bridge pier would also require in-channel work, including the installation of a temporary clean-gravel access ramp that would extend from the right bank to the pier. This work would occur during the summer following construction of the new bridge and would be completed within the June 15th to September 15th timeframe. After demolition, the gravel ramp will be distributed/contoured over the adjacent channel bottom to avoid a potential backwater effect.

Any construction-related increase in base floodwater surface elevation that will take place during the June 15th to September 15th window would be considered less than significant due to the extremely low risk of flooding. Any

temporary facilities placed within the river channel will be removed from the floodplain prior to the onset of the flood season.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Although the single bridge pier will be located outside the low-flow active channel of the Trinity River, some encroachment into the low flow active channel may be necessary to construct the pier or the working platform to be used for pier construction. Similar to the Proposed Action, a 960 ft^2 gravel work platform would need to be created for equipment setup and access for bent construction. Construction work in the in-river channel is limited to the period between June 15th and September 15th, which is the dry season in this region. The exception would be the first season of construction in Fall 2003, when in-water work will take place during the fall and winter of 2003-2004 (outside of the June 15 to September 15 dry season in-river construction period).

Demolition of the old bridge pier would also require in-channel work, including the installation of a temporary clean-gravel access ramp that would extend from the right bank to the pier. This work would occur during the summer following construction of the new bridge and would be completed within the June 15th to September 15th timeframe. After demolition, the gravel ramp will be distributed/contoured over the adjacent channel bottom to avoid a potential backwater effect.

Any construction-related increase in base floodwater surface elevation that will take place during the June 15th to September 15th window (or October 15th in first year of construction) would be considered less than significant due to the extremely low risk of flooding. The contractor will be required to remove all temporary facilities placed within the river channel from the floodplain prior to the onset of the flood season.

Mitigation Measures

No-Action Alternative; Proposed Action, Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.4-3: Construction and implementation of the Trinity River Bridges Project may necessitate the relocation of one or more private wells. ***No Impact for the No-Action Alternative, Proposed Action, and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, a new bridge would not be constructed at the Biggers Road site; therefore, the shallow domestic water well and pump located approximately 20 feet upstream of the existing pier 3 would not need to be relocated.

Proposed Action (Replacement Upstream)

The shallow domestic water well and pump located approximately 20 feet upstream of the existing pier 3 will not be impacted by construction or implementation of the Proposed Action. Construction of the proposed project would not reduce the available quantity of local groundwater, nor would it degrade the water quality conditions of the local groundwater table.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

The shallow domestic water well and pump located approximately 20 feet upstream of the existing pier 3 will not be impacted by construction or implementation of Alternative 1. Construction of the proposed project would not reduce the available quantity of local groundwater, nor would it degrade the water quality conditions of the local groundwater table.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

SECTION 3.5

Water Quality

3.5 Water Quality

This section describes the water conditions from both regional and local perspectives. The following evaluation is based on review of existing literature and data, particularly the *Water Quality Control Plan for the North Coast Region* (NCRWQCB 2001). Surface hydrology and groundwater issues are evaluated in **Section 3.4**, Water Resources, with fisheries issues evaluated in **Section 3.6,** Fishery Resources and other aquatic resources and jurisdictional waters evaluated in **Section 3.7**, Vegetation, Wildlife, and Wetlands.

3.5.1 Affected Environment/Environmental Setting

Trinity River Water Quality

The beneficial uses associated with cold-water fish habitat are currently impaired in the Trinity River Basin (EPA 2001). Disturbance is a natural part of the riverine ecosystem, and salmonid populations naturally fluctuate in response to disturbances, but anthropogenic activities can affect the severity and frequency of these disturbance processes. A dramatic decrease in abundance of Trinity River cold-water fishes has taken place since closure of Trinity Dam in 1963 (B. Gutermuth, pers. comm. 2003).

The State of California has determined that the Trinity River is impaired in accordance with Section 303 (d) of the Clean Water Act due to excessive sediment. The primary adverse impacts associated with excessive sediment in the Trinity River pertain to the anadromous salmonid fish habitat. The State water quality standards consist of designated uses, water quality criteria to protect the uses, and an antidegradation policy.

Water Quality Management

The project site is subject to the *Water Quality Control Plan for the North Coast Region* (Basin Plan), as amended June 28, 2001 for the NCRWQCB. The Basin Plan for the North Coast Region includes all the land area that drains into the Klamath River and North Coast basins. The Trinity River is included in the Klamath Basin, and then further defined into distinct Hydrologic Areas. The Lower Trinity Hydrologic Area is that portion of the watershed that is downstream of Lewiston Reservoir.

The beneficial uses and water quality objectives for the Trinity River are contained in the Basin Plan. The beneficial uses pertinent to the Trinity River are listed in **Table 3.5-1**.

TABLE 3.5-1
TRINITY RIVER BENEFICIAL USES

Beneficial Water Uses	Lower Trinity River Hydrologic Area (Applies to that portion of the Trinity River below Lewiston reservoir)
Municipal and Domestic Supply	Existing
Agricultural Supply	Existing
Industrial Service Supply	Potential
Groundwater Recharge	Existing
Freshwater Replenishment	Existing
Water Contact Recreation	Existing
Non-Contact Recreation	Existing
Commercial and Sport Fishing	Existing
Cold Freshwater Habitat	Existing
Wildlife Habitat	Existing
Migration of Aquatic Organisms	Existing
Rare, Threatened or Endangered Species	Existing
Spawning, Reproduction and/or Early Development of fish	Existing
Aquaculture	Potential

The beneficial uses impaired by excessive sediment in the Trinity River are primarily those associated with supporting high quality habitat for fish. Recreation is another important beneficial use potentially impacted by sedimentation. Recreation activities throughout the project areas include boating, fishing, swimming, kayaking, rafting, inner tubing, wading, camping, gold panning, picnicking, hiking, nature studying, and sightseeing.

The Basin Plan identifies both numeric and narrative water quality objectives for the Trinity River. **Table 3.5-2** summarizes the various water quality objectives, by categories, which have been established by the NCRWQCB to protect designated beneficial uses.

In addition to water quality objectives, the Basin Plan includes two prohibitions specifically to logging, construction and other associated non-point source activities:

- The discharge of soil, silt, bark, sawdust or other organic and earthen material from any logging, construction or associated activity of whatever nature into any stream or watercourse in the basin in quantities deleterious to fish, wildlife or other beneficial uses is prohibited.
- The placing or disposal of soil, silt, bark, slash or sawdust or other organic and earthen material from any logging construction or associated activity of whatever nature at locations where such material could pass into any stream or watercourse in the basin in quantities deleterious to fish, wildlife or other beneficial uses is prohibited.

TABLE 3.5-2
WATER QUALITY OBJECTIVES FOR THE TRINITY RIVER WITHIN THE PROJECT AREA
(BASIN PLAN OBJECTIVES)

Category	Objective Threshold	Applicable Portion of Water Body
Bacteria	The bacteriological quality of waters of the North Coast region shall not be degraded beyond natural background levels. In waters designated for contact recreation, the median fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed 50/100 milliliters (ml), nor shall more than 10 percent of the total number of samples taken during any 30-day period exceed 400/100 ml.	Entire Trinity River
Biostimulatory Subtances	Water shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.	Entire Trinity River
Color	Water shall be free of coloration that causes nuisance or adversely affects beneficial uses.	Entire Trinity River
Chemical Constituents	Waters designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the CCR.	Entire Trinity River
Dissolved Oxygen	Shall not be depressed below 8.0 nor raised above 10.	Entire Trinity River
Floating Material	Water shall not contain floating material, including solids, liquids, foams and scum in concentrations that cause nuisance or adversely affect beneficial uses.	Entire Trinity River
Oil and Grease	Waters shall not contain oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.	Entire Trinity River
pH	Shall not be depressed below 7.0 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.	Entire Trinity River
Pesticides	No individual or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. There shall be no bioaccumulation of pesticide concentrations found in bottom sediments or aquatic life.	Entire Trinity River
Radioactivity	Radionuclides shall not be present in concentrations that are harmful to human, plant, animal or aquatic life that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life. At a minimum, waters designated for use as domestic or municipal supply shall not contain concentrations of radionuclides in excess of the MCLs specified in the CCR.	Entire Trinity River

TABLE 3.5-2
WATER QUALITY OBJECTIVES FOR THE TRINITY RIVER WITHIN THE PROJECT AREA
(BASIN PLAN OBJECTIVES)

Category	Objective Threshold	Applicable Portion of Water Body
Sediment	The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.	Entire Trinity River
Settleable Material	Water shall not contain substances in concentrations that result in the disposition of material that causes nuisance or adversely affects beneficial uses.	Entire Trinity River
Suspended Material	Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.	Entire Trinity River
Tastes & Odors	Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.	Entire Trinity River
Temperature	Temperatures will be consistent with those outlined in **Table 3.5-3**.	Trinity River subject to NCRWQCB
Toxicity	Maintain free of toxic substances in concentrations (individual or interactive) that produce detrimental physiological responses in human, plant, animal, or aquatic life.	Entire Trinity River
Turbidity	Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution with which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.	Entire Trinity River

Source: Basin Plan (NCRWQCB 2001)

Two additional documents address specific elements of water quality in the Trinity River Basin. The NCRWQCB "Interim Action Plan for the Trinity River" is incorporated into the Basin Plan and addresses flow and temperature issues in that portion of the river affected by the TRD of the CVP. The *Trinity River Total Maximum Daily Load for Sediment* (EPA 2001) identifies the total load of sediment that can be delivered to the Trinity River and its tributaries without exceeding water quality standards based on current flow conditions and estimated flows under the ROD.

Key features of the TRD include Lewiston Dam, Trinity Dam and the facilities, which provide the diversion of runoff from the Trinity River watershed to the Sacramento River basin. The construction of the dams and the diversion has diverted up to 90% of the natural flows since 1963 and has substantially changed the rivers temperature regime. This change has disrupted the physical cues for migration and spawning of anadromous salmonids.

Trinity River water temperatures are influenced by Trinity and Lewiston Reservoir release temperatures, flow rates, channel geometry, regional meteorology, and tributary flows and temperatures (the effect of Trinity and Lewiston Reservoirs diminishes with distance downstream). Generally speaking, the greater the release volumes from the dams, the less susceptible the river's temperature is to other factors. Trinity Reservoir releases tend to be generally cold (42-47 °F), whereas Lewiston Reservoir, which is much shallower, tends to provide releases that are more affected by ambient temperatures. All releases to the Trinity River emanate from Lewiston Reservoir.

The NCRWQCB has defined temperature objectives that apply to activities in the Trinity River. Temperature standards are effective from July 1 to December 31 for the upper reach between Lewiston Dam and the North Fork Trinity River. Standards for the Trinity River are presented in **Table 3.5-3**. The objectives also stipulate that water released into the Trinity River may be no more than 5°F warmer than receiving water temperatures.

TABLE 3.5-3
NCRWQCB TEMPERATURE OBJECTIVES FOR THE TRINITY RIVER

Temperature	Dates	Trinity River Reach
60 F (15.6 C)	July 1 – September 14	Lewiston Dam to Douglas City Bridge
56 F (13.3 C)	September 15 – October 1	Lewiston Dam to Douglas City Bridge
56 F (13.3 C)	October 1 – December 31	Lewiston Dam to confluence with North Fork

The TMDL for sediment describes how seasonal variation in considered. Sediment delivery in the Trinity River watershed inherently has considerable annual and seasonal variability. Due to variability in terms of magnitude, timing, duration and frequency, the TMDL and load allocation applies to the sources of sediment and uses a ten-year rolling average.

The TMDL does not allocate flow; however, it does take into account critical conditions for flow, loading and water quality parameters. The control of the streamflow below the TRD has greatly contributed to the impairment of the Trinity River below Lewiston Dam (EPA 2001). The reduction in available coarse sediment upstream of Rush Creek and the significant contribution of fine sediment from Grass Valley Creek have severely affected the sediment flux in the river. These effects are observable as far downstream as the North Fork.

3.5.2 REGULATORY FRAMEWORK

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act governs the Basin Plan's water quality objectives. The Act requires the Basin Plan to consider the following factors:

- Past, present, and probable future beneficial uses
- Environmental characteristics of the hydrographic unit under consideration, including the quality of the water available
- Water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect water quality in the area
- Economic considerations
- The need to develop housing within an area
- The need to develop and use recycled water

California Regional Water Quality Control Board (RWQCB)

The NCRWQCB requires that a project proponent obtain a Section 401 (Clean Water Act) water quality certification or waiver for Section 404 permits granted by the Corps. Since the project would have potential to impact water quality within the Trinity River, the NCRWQCB is likely to impose water quality limitations on the project either through a waste discharge requirement or a conditional waiver. The BOR will prepare and submit to the NCRWQCB a request for water quality certification or waste discharge requirements. The request will be submitted to the NCRWQCB when the pre-construction notification is sent to the Corps. A likely condition of the NCRWQCB is the preparation of an erosion and sedimentation control plan and spill prevention and containment plan.

The NCRWQCB controls the discharge of wastes to surface waters from industrial processes or construction activities through the NPDES. Waste discharge requirements are established in the permit to protect beneficial uses. The NCRWQCB will require an application for a waste discharge permit for the proposed Project.

Trinity County General Plan Goals and Objectives

The Trinity County General Plan contains goals and policies designed to guide the future physical development of the county, based on current conditions. The General Plan contains all the state-required elements, including land use, open space, transportation/circulation, housing, safety, noise, and conservation. No goals and policies relative to water quality issues associated with the project study area were identified in the General Plan (County 2001). This includes the Lewiston Community Plan (County 1986) and the Douglas City Plan (County 1987).

Trinity County Water Quality Control Ordinance

The Trinity County Water Quality Control Ordinance (Ordinance #1072, County Code Section 8.60.010-8.6-020) establishes that it is necessary to ensure the water quality of watersheds and water supply areas in Trinity County and dictates that "no use, application, discharge, disposal of any polluting substance or any other controllable water quality activities may be initiated, undertaken, or maintained by any person if said use or activity results in a detectable discharge of polluting substances into waters of the state located in or flowing through the county" (Ord. 1072 1(part), 1985).

3.5.3 Environmental Consequences/Impacts and Mitigation Measures

Methodology

Water quality impacts are identified by analyzing the information available on the location, construction and operation of bridges and associated features (i.e. approaches, roadways, staging areas). Basic principles of water quality are applied to qualitatively determine impacts, as determined by comparing against the Basin Plan objectives for the Trinity River.

Significance Criteria

The project would result in significant adverse impacts if it would result in any of the following:

- Violations of local, state, or federal numerical water quality standards, or local, state, or federal narrative water quality objectives for construction activities.
- Substantial degradation of water quality, such that existing beneficial uses are precluded specifically due to adverse water quality.

- Violation of any waste discharge requirements.
- Substantial alterations of the course of a stream or river in a manner that would result in substantial erosion or siltation on, or off-site.
- Short- or long-term increases in turbidity of 20 percent or more over naturally occurring background levels.
- Contamination of a public water supply.
- Violation of site-specific temperature objectives for the Trinity River contained in the Basin Plan (NCRWQCB 2001) and included as **Table 3.5-3** of this section.

Impacts and Mitigation Measures

Table 3.5-4 summarizes the potential water quality impacts resulting from construction and operation of the proposed Project.

TABLE 3.5-4
SUMMARY OF WATER QUALITY IMPACTS FROM THE PROPOSED TRINITY RIVER BRIDGES PROJECT

Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Alternative 2
1. Construction of the proposed Trinity River Bridges Project could result in short-term temporary increases in turbidity and total suspended solids levels during construction.	Salt Flat	NI	S	S	S
	Bucktail	NI	S	S	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
2. Construction of the proposed Trinity River Bridges Project could potentially cause contamination of the Trinity River from hazardous materials spills.	Salt Flat	NI	S	S	S
	Bucktail	NI	S	S	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
3. Operation of the Trinity River Bridges Project would result in increased pollutant loads from bridges/roadway runoff into the Trinity River.	Salt Flat	NI	LS	LS	LS
	Bucktail	NI	NI	NI	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A
4. Construction and operation of the Trinity River Bridges Project could result in increased stormwater runoff and subsequent potential for erosion.	Salt Flat	NI	LS	LS	LS
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A
5. Construction and operation of the Trinity River Bridges Project could result in the degradation of Trinity River beneficial uses identified in the Basin Plan.	Salt Flat	NI	LS	LS	LS
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A

Notes:
LS = Less than Significant S = Significant NI = No Impact SU = Significant Unavoidable
N/A = Not Applicable

Salt Flat Bridge

Impact 3.5-1: Construction of the proposed Trinity River Bridges Project could result in short-term temporary increases in turbidity and total suspended solids levels during construction. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative a new bridge would not be constructed at the Salt Flat site; therefore, no construction-related short-term increases in turbidity or total suspended solids levels would occur.

Proposed Action (Replacement Downstream, Private Ownership)

Implementing the Proposed Action would increase turbidity and total suspended solids during construction in the river. During in-river construction activities, potential increases in turbidity levels could occur during construction of the temporary crossing over the left river channel and construction of the new right bridge abutment, and would likely be greatest during removal of the existing bridge structure. The single column bent and left bridge abutment will be located outside of the active low-flow channel of the Trinity River. Fine sediments may be suspended in the river for several hours following construction activities. The extent of downstream sedimentation would be a function of the instream flow velocity and particle size. For example, fine-grained sediments like silts and clays can be carried several thousand feet downstream of the bridge pier construction limits, while larger-sized sediments like sands and gravels would tend to drop out of the water column within several feet of the construction limit.

In-river construction activities will be staged to minimize potential turbidity effects. These in-stream construction activities could result in short-term increases in turbidity and suspended solids concentrations in the water column that could potentially be in violation of the NCRWQCB's Basin Plan objectives for turbidity in the Trinity River. Increased turbidity and suspended solids levels could also adversely affect anadromous fish species that are known to occur in the Trinity River (refer to **Section 3.6**, Fishery Resources).

Alternative 1 (Replacement Upstream, Private Ownership)

Implementing Alternative 1 would increase turbidity and total suspended solids during construction in the river. During in-river construction activities, potential increases in turbidity levels could occur during construction of the temporary crossing over the left river channel and construction of new bridge abutments, and would likely be greatest during removal of the existing bridge structure. Fine sediments may be suspended in the river for several hours following construction activities. The extent of downstream sedimentation would be a function of the instream flow velocity and particle size. For example, fine-grained sediments like silts and clays can be carried several thousand feet downstream of the bridge pier construction limits, while larger-sized sediments like sands and gravels would tend to drop out of the water column within several feet of the construction limit.

In-river construction activities will be staged to minimize potential turbidity effects. These in-stream construction activities could result in short-term increases in turbidity and suspended solids concentrations in the water column that could potentially be in violation of the NCRWQCB's Basin Plan objectives for turbidity in the Trinity River. Increased turbidity and suspended solids levels could also adversely affect anadromous fish species that are known to occur in the Trinity River (refer to **Section 3.6**, Fishery Resources).

Alternative 2 (Replacement Upstream, Public Ownership)

Temporary increases in turbidity or total suspended solids levels associated with construction of Alternative 2 would be similar to Alternative 1.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Proposed Action; Alternative 1; Alternative 2

SF-1a: Turbidity increases associated with project construction activities shall not exceed the NCRWQCB water quality objectives for turbidity in the Trinity River Basin. The current threshold for turbidity levels in the Trinity River, as listed in the Basin Plan (NCRWQCB 2001), is summarized below.

- Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.

SF-1b: To ensure that turbidity levels do not exceed the threshold listed above during in-stream project construction activities; the BOR shall coordinate with the contractor to monitor turbidity levels 50 feet upstream and 300 feet downstream of the point of in-stream construction activities. Sampling procedures shall be performed in accordance with applicable permit requirements. Grab samples should be taken four times daily, when construction activities potentially have the greatest water quality impact (i.e., placement of gravel for temporary crossing, drilling for bent placement, bridge removal, if applicable). In the event that monitoring data reveal that Basin Plan turbidity objectives are being exceeded, BOR shall modify its construction activities in whatever manner is necessary to reduce turbidity to levels consistent with those objectives.

SF-1c: Contractor shall prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that includes silt fences, sediment filters, dewatering activities, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls and dewatering activities should be adequate to minimize sediment inputs into the Trinity River until vegetation re-growth occurs. All sediment containment devices and erosion control devices will be inspected daily during the construction period to ensure that devices are properly functioning. Excavated and stored materials will be kept in upland sites with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland sites. All applicable erosion control standards will be required during stockpiling of materials.

Significance after Mitigation: *Less than Significant.*

Impact 3.5-2: Construction of the proposed Trinity River Bridges Project could potentially cause contamination of the Trinity River from hazardous materials spills. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative a new bridge would not be constructed at the Salt Flat site; therefore, no construction-related contamination of the Trinity River from hazardous materials spills would occur.

Proposed Action (Replacement Downstream, Private Ownership)

Construction staging activities could potentially result in a spill of hazardous materials (i.e., oil, grease, gasoline, solvent) into the Trinity River. In addition, operation of construction equipment within or adjacent to the river will increase the risk of a spill of hazardous materials into the river (i.e., construction equipment leaking fluids). The potential spill of hazardous materials, including concrete used for bent and abutment footings, into the Trinity River could degrade water quality within the Trinity River and have deleterious effects on all life stages of salmonids present within close proximity to construction activities. **Section 3.15**, Hazardous Materials, evaluates potential effects associated with removal of the existing bridge structures, specifically lead-based paint, contaminated soils, and total recoverable petroleum hydrocarbons.

Alternative 1 (Replacement Upstream, Private Ownership)

The potential for contaminating the Trinity River with hazardous materials associated with construction of Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

The potential for contaminating the Trinity River with hazardous materials associated with construction of Alternative 2 would be similar to the Proposed Action and Alternative 1.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Proposed Action; Alternative 1; Alternative 2

SF-2a: The BOR shall require that the bridge contractor prepare and implement a spill prevention and containment plan in accordance with applicable federal and state requirements.

SF-2b: The BOR shall include in the construction contract documents a requirement that any construction equipment that would come in contact with the Trinity River will need to be inspected daily for leaks prior to entering the flowing channel. External oil, grease, and mud will be removed from equipment using steam cleaning. Untreated wash and rinse water must be adequately treated prior to discharge if that is the desired disposal option.

SF-2c: The BOR shall include in the construction contract documents a requirement that hazardous materials, including fuels, oils, solvents, not be stored or transferred within 150 feet of the active Trinity River channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active river channel. In addition, the construction contractor shall be responsible for maintaining spill containment booms onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

Significance after Mitigation: *Less than Significant.*

Impact 3.5-3: Operation of the Trinity River Bridges Project would result in increased pollutant loads from bridges/roadway runoff into the Trinity River. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1 and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative a new bridge would not be constructed at the Salt Flat site; therefore, increased pollutant loads associated with project implementation would not occur.

Proposed Action (Replacement Downstream, Private Ownership)

The operation and maintenance of roadways can contribute to a variety of pollutants that could degrade the quality of surface water and groundwater resources. Roadway runoff contains several pollutants that may affect the beneficial uses of surface water, including solids, heavy metals, nutrients, oils and greases, and other contaminants. Concentrations of these pollutants are locally variable, and are directly affected by traffic conditions, climate, timing of roadway maintenance, and adjacent land uses. The majority of the pollutants are contained in silt and clay particles. Roadway pollutants such as heavy metals, organics, and solids typically correlate directly with traffic volumes.

Implementation of the Proposed Action would not result in the creation of new impervious surface areas (i.e., new bridge structure and roadway approaches) because an existing roadway and roadway approaches already exist at the Salt Flat site. Although the new structure will be capable of carrying any legal load vehicle, which could encourage increased transport of materials across the new bridge, increased traffic volumes resulting from implementation of the Proposed Action would be minor because the new bridge will remain under private ownership (see Transportation/Traffic Circulation, **Section 3.18**). Increased pollutant loads resulting from implementation of the Proposed Action would be less than significant.

Alternative 1 (Replacement Upstream, Private Ownership)

The potential for increased pollutant loads associated with operation of Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

The potential for increased pollutant loads associated with operation of Alternative 2 would be similar to the Proposed Action and Alternative 1.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1, Alternative 2

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Impact 3.5-4: Construction and operation of the Trinity River Bridges Project could result in increased stormwater runoff and subsequent potential for erosion. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative a new bridge would not be constructed at the Salt Flat site; therefore, stormwater runoff and subsequent potential for erosion would not increase.

Proposed Action (Replacement Downstream, Private Ownership)

Implementation of the Proposed Action would not result in an increase of impervious surface areas (i.e., structure and roadway approaches) that could subsequently generate additional stormwater runoff and potential for erosion because roadway approaches and an existing structure already exist at the Salt Flat site. No new development is expected to increase traffic or polluted stormwater runoff.

Alternative 1 (Replacement Upstream, Private Ownership)

Increased stormwater runoff and subsequent potential for erosion associated with construction and implementation of Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Stormwater runoff and subsequent potential for erosion associated with construction and implementation of Alternative 2 would be increased to some extent due to the increased width of the bridge to meet public road standards and associated roadway under public ownership. Increased usage as a result of new public access to the site may also increase polluted runoff from the road and potential parking areas for access to the river and BLM lands on the west side of the river, but this cannot be quantified. The surface of Salt Flat Road will be designed to minimize runoff and erosion protection measures will be constructed using the criteria outlined in **Section 2.4.1**.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1; Alternative 2

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Impact 3.5-5: Construction and operation of the Trinity River Bridges Project could result in the degradation of Trinity River beneficial uses identified in the Basin Plan. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative a new bridge would not be constructed at the Salt Flat site; therefore, degradation of Trinity River beneficial uses identified in the Basin Plan would not occur. However, the beneficial effect of improving the conveyance of high flow events without bridge overtopping or increased backwater effect associated that would occur if the existing bridge was replaced would not be realized.

Proposed Action (Replacement Downstream, Private Ownership); Alternative 1 (Replacement Upstream, Private Ownership); Alternative 2 (Replacement Upstream, Public Ownership)

The consistency of the Proposed Action and project alternatives with Trinity River beneficial uses outlined in the Basin Plan (NCRWQCB 2001) is evaluated in **Table 3.5-5**.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1; Alternative 2

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

TABLE 3.5-5
CONSISTENCY OF THE SALT FLAT PROPOSED ACTION AND PROJECT ALTERNATIVES WITH TRINITY RIVER BENEFICIAL USES

Beneficial Water Uses	Project Consistency
Municipal and Domestic Supply	Interruptions of municipal or domestic supplies are discussed in **Section 3.17**, Public Services and Utilities/Energy. Construction and implementation of the Proposed Action, Alternative 1, and Alternative 2 could temporarily degrade a municipal or domestic water supply due to increases in turbidity and total suspended solids associated with construction activities. Implementation of Mitigation Measure SF-1, discussed previously in this section, would reduce this impact to a less than significant level.
Agricultural Supply	No agricultural uses have been identified in the project vicinity. Construction and implementation of the Proposed Action, Alternative 1, and Alternative 2 would not impact agricultural water supplies.
Industrial Service Supply	No industrial services have been identified in the project vicinity. Construction and implementation of the Proposed Action, Alternative 1, and Alternative 2 would not impact industrial service water supplies.
Groundwater Recharge	Construction and implementation of the Proposed Action, Alternative 1, and Alternative 2 would not impact groundwater recharge.
Freshwater Replenishment	Construction and implementation of the Proposed Action, Alternative 1, and Alternative 2 would not impact freshwater replenishment.
Water Contact Recreation	Impacts to recreation resulting from project construction and implementation are discussed in **Section 3.8**.
Non-Contact Recreation	Impacts to recreation resulting from project construction and implementation are discussed in **Section 3.8.**
Commercial and Sport Fishing	Impacts to recreation resulting from project construction and implementation are discussed in **Section 3.8.**
Cold Freshwater Habitat	Construction and implementation of the Proposed Action, Alternative 1, and Alternative 2 would not adversely impact cold freshwater habitat. The proposed Project would be consistent with any further restoration activities that may be implemented in the future as part of the overall Trinity River Mainstem Restoration Project.
Wildlife Habitat	Impacts to wildlife resources resulting from project construction and implementation are discussed in **Section 3.7.**

TABLE 3.5-5
CONSISTENCY OF THE SALT FLAT PROPOSED ACTION AND PROJECT ALTERNATIVES WITH TRINITY RIVER BENEFICIAL USES

Beneficial Water Uses	Project Consistency
Migration of Aquatic Organisms	Although a temporary crossing will obstruct the left channel of the Trinity River under the Proposed Action, Alternative 1, and Alternative 2, migration of aquatic organisms up and/or down the main channel of the Trinity River will not be obstructed. Construction and implementation of the Proposed Action, Alternative 1, and Alternative 2 would not adversely impact the migration of aquatic organisms. There will be a permanent benefit to migration of aquatic organisms since there will be two less piers/bents within the river channel.
Rare, Threatened or Endangered Species	Impacts to rare, threatened, or endangered species resulting from project construction and implementation are discussed in **Section 3.7**, Vegetation, Wildlife, and Wetlands. No permanent, adverse effects to rare, threatened, or endangered species is anticipated to occur at the Salt Flat site.
Spawning, Reproduction and/or Early Development of fish	Construction and implementation of the Proposed Action, Alternative 1, and Alternative 2 would not permanently affect spawning, reproduction, or early development of fish.
Aquaculture	Not applicable to the proposed Project.

Bucktail Bridge

Impact 3.5-1: Construction of the proposed Trinity River Bridges Project could result in short-term temporary increases in turbidity and total suspended solids levels during construction. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative the west approach roadway and the existing culvert will not be replaced at the Bucktail site; therefore, no construction-related short-term increases in turbidity or total suspended solids levels would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Implementing the Proposed Action would increase turbidity and total suspended solids during construction associated with the roadway and culvert replacement. Although no construction activities are expected within the low-flow active channel, potential increases in turbidity levels would likely be greatest during construction of the temporary construction detour, which will be located within the active floodplain of the Trinity River. Fine sediments may be suspended in the river for several hours following construction. The extent of downstream sedimentation would be a function of the instream flow velocity and particle size. For example, fine-grained sediments like silts and clays can be carried several thousand feet downstream of the construction limits, while larger-sized sediments like sands and gravels would tend to drop out of the water column within several feet of the construction limit. No in-river construction activities will occur as part of the Proposed Action.

Alternative 1 (Raise Existing Upstream Levee)

Implementing Alternative 1 would increase turbidity and total suspended solids during construction in the river (i.e., placement of rip-rap on the river side of the levee). Fine sediments may be suspended in the river for several hours following construction activities. The extent of downstream sedimentation would be a function of the instream flow velocity and particle size. For example, fine-grained sediments like silts and clays can be carried several thousand feet downstream of the levee construction and rip-rap placement, while larger-sized sediments like sands and gravels would tend to drop out of the water column within several feet of the construction limit.

In-river construction activities will be staged to minimize potential turbidity effects. These in-stream construction activities could result in short-term increases in turbidity and suspended solids concentrations in the water column that could potentially be in violation of the NCRWQCB's Basin Plan objectives for turbidity in the Trinity River. Increased turbidity and suspended solids levels could also adversely affect anadromous fish species that are known to occur in the Trinity River (refer to **Section 3.6**, Fishery Resources).

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Proposed Action; Alternative 1

BT-1a: Turbidity increases associated with project construction activities shall not exceed the NCRWQCB water quality objectives for turbidity in the Trinity River Basin. The current threshold for turbidity levels in the Trinity River, as listed in the Basin Plan (NCRWQCB 2001), is summarized below.

- Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.

BT-1b: To ensure that turbidity levels do not exceed the threshold listed above during in-stream project construction activities; the BOR shall coordinate with the contractor to monitor turbidity levels 50 feet upstream and 300 feet downstream of the point of in-stream construction activities. Sampling procedures shall be performed in accordance with applicable permit requirements. Grab samples should be taken four times daily, when construction activities potentially have the greatest water quality impact (i.e., construction of temporary construction detour, placement of rip-rap, if applicable). In the event that monitoring data reveal that Basin Plan turbidity objectives are being exceeded, BOR shall modify its construction activities in whatever manner is necessary to reduce turbidity to levels consistent with those objectives.

BT-1c: Contractor shall prepare and implement an SWPPP that includes silt fences, sediment filters, dewatering activities, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls and dewatering activities should be adequate to minimize sediment inputs into the Trinity River until vegetation re-growth occurs. All sediment containment devices and erosion control devices will be inspected daily during the construction period to ensure that devices are properly functioning. Excavated and stored materials will be kept in upland sites with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland sites. All applicable erosion control standards will be required during stockpiling of materials.

Significance after Mitigation: *Less than Significant.*

Impact 3.5-2: Construction of the proposed Trinity River Bridges Project could potentially cause contamination of the Trinity River from hazardous materials spills. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the west approach roadway and the existing culvert will not be replaced at the Bucktail site; therefore, no construction-related contamination of the Trinity River from hazardous materials spills would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Construction staging activities could potentially result in a spill of hazardous materials (i.e., oil, grease, gasoline, solvent) into the Trinity River. In addition, operation of construction equipment within or adjacent to the river will increase the risk of a spill of hazardous materials into the river (i.e., construction equipment leaking fluids). The potential spill of hazardous materials, including concrete used for culvert footings, into the Trinity River could degrade water quality within the Trinity River and have deleterious effects on all life stages of salmonids present within close proximity to construction activities.

Alternative 1 (Raise Existing Upstream Levee)

Construction staging activities could potentially result in a spill of hazardous materials (i.e., oil, grease, gasoline, solvent) into the Trinity River. In addition, operation of construction equipment within or adjacent to the river will increase the risk of a spill of hazardous materials into the river (i.e., construction equipment leaking fluids). The potential spill of hazardous materials into the Trinity River could degrade water quality within the Trinity River and have deleterious effects on all life stages of salmonids present within close proximity to construction activities.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Proposed Action; Alternative 1

BT-2a: The BOR shall require that the bridge contractor prepare and implement a spill prevention and containment plan in accordance with applicable federal and state requirements.

BT-2b: The BOR shall include in the construction contract documents a requirement that any construction equipment that would come in contact with the Trinity River will need to be inspected daily for leaks prior to entering the flowing channel. External oil, grease, and mud will be removed from equipment using steam cleaning. Untreated wash and rinse water must be adequately treated prior to discharge if that is the desired disposal option.

BT-2c: The BOR shall include in the construction contract documents a requirement that hazardous materials, including fuels, oils, solvents, not be stored or transferred within 150 feet of the active Trinity River channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active river channel. In addition, the construction contractor shall be responsible for maintaining spill

containment booms onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

Significance after Mitigation: *Less than Significant.*

Impact 3.5-3: Operation of the Trinity River Bridges Project would result in increased pollutant loads from bridges/roadway runoff into the Trinity River. ***No Impact for the No-Action Alternative, Proposed Action, and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the west approach roadway and the existing culvert will not be replaced at the Bucktail site; therefore, increased pollutant loads associated with project implementation would not occur. However, the beneficial effect of improving the conveyance of high flow events to avoid overtopping Browns Mountain Road (western approach) associated with either the Proposed Action or Alternative 1 would not be realized. Overtopping of the Browns Mountain Road could introduce pollutant loads from the asphalt surface to the Trinity River.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

The operation and maintenance of roadways can contribute to a variety of pollutants that could degrade the quality of surface water and groundwater resources. Roadway runoff contains several pollutants that may affect the beneficial uses of surface water, including solids, heavy metals, nutrients, oils and greases, and other contaminants. Concentrations of these pollutants are locally variable, and are directly affected by traffic conditions, climate, timing of roadway maintenance, and adjacent land uses. The majority of the pollutants are contained in silt and clay particles. Roadway pollutants such as heavy metals, organics, and solids typically correlate directly with traffic volumes. No new development is expected to increase traffic or polluted stormwater runoff.

Implementation of the Proposed Action would not create new impervious surface areas (i.e., new bridge structure and roadway approaches) because an existing roadway already exists at the Bucktail site. Increased traffic volumes are not expected to result from implementing the Proposed Action. Operation of the Proposed Action is therefore not anticipated to increase roadway-associated pollutant loads to the Trinity River.

Alternative 1 (Raise Existing Upstream Levee)

Alternative 1 does not include any alterations to roadways, and would not result in an increase in impervious surfaces in the project area. Implementation of Alternative 1 is therefore not anticipated to increase roadway-associated pollutant loads to the Trinity River. No new development is expected to increase traffic or polluted stormwater runoff.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Impact 3.5-4: Construction and operation of the Trinity River Bridges Project could result in increased stormwater runoff and subsequent potential for erosion. ***No Impact for the No-Action Alternative, Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the west approach roadway and the existing culvert will not be replaced at the Bucktail site; therefore, stormwater runoff and subsequent potential for erosion would not increase.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Roadways already exist at the Bucktail Bridge site. Implementation of the Proposed Action would not result in an increase of impervious surface areas (i.e., structure and roadway approaches) that could subsequently generate additional stormwater runoff and potential for erosion.

Alternative 1 (Raise Existing Upstream Levee)

Roadways already exist at the Bucktail Bridge site. Implementation of Alternative 1 would not result in an increase of impervious surface areas (i.e., structure and roadway approaches) that could subsequently generate additional stormwater runoff and potential for erosion.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Impact 3.5-5: Construction and operation of the Trinity River Bridges Project could result in the degradation of Trinity River beneficial uses identified in the Basin Plan. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, the west approach roadway and the existing culvert will not be replaced at the Bucktail site; therefore, degradation of Trinity River beneficial uses identified in the Basin Plan would not occur. However, the beneficial effect of improving the conveyance of high flow events to avoid overtopping Browns Mountain Road (western approach) associated with either the Proposed Action or Alternative 1 would not be realized.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert); Alternative 1 (Raise Existing Upstream Levee)

The consistency of the Proposed Action and project alternatives with Trinity River beneficial uses outlined in the Basin Plan (NCRWQCB 2001) is evaluated in **Table 3.5-6**.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

TABLE 3.5-6
CONSISTENCY OF THE BUCKTAIL PROPOSED ACTION AND PROJECT ALTERNATIVES WITH TRINITY RIVER BENEFICIAL USES

Beneficial Water Uses	Project Consistency
Municipal and Domestic Supply	Interruptions of municipal or domestic supplies are discussed in **Section 3.17**, Public Services and Utilities/Energy. Construction and implementation of the Proposed Action and Alternative 1 could temporarily degrade a municipal or domestic water supply due to increases in turbidity and total suspended solids associated with construction activities. Implementation of Mitigation Measure BT-1, discussed previously in this section, would reduce this impact to a less than significant level.
Agricultural Supply	No agricultural uses have been identified in the project vicinity. Construction and implementation of the Proposed Action and Alternative 1 would not impact agricultural water supplies.
Industrial Service Supply	No industrial services have been identified in the project vicinity. Construction and implementation of the Proposed Action and Alternative 1 would not impact industrial service water supplies.
Groundwater Recharge	Construction and implementation of the Proposed Action and Alternative 1 would not impact groundwater recharge.
Freshwater Replenishment	Construction and implementation of the Proposed Action and Alternative 1 would not impact freshwater replenishment.
Water Contact Recreation	Impacts to recreation resulting from project construction and implementation are discussed in **Section 3.8**.
Non-Contact Recreation	Impacts to recreation resulting from project construction and implementation are discussed in **Section 3.8**.
Commercial and Sport Fishing	Impacts to recreation resulting from project construction and implementation are discussed in **Section 3.8**.
Cold Freshwater Habitat	Construction and implementation of the Proposed Action or Alternative 1 would not adversely impact cold freshwater habitat. The proposed Project would be consistent with any further restoration activities that may be implemented in the future as part of the overall Trinity River Mainstem Restoration Project.
Wildlife Habitat	Impacts to wildlife resources resulting from project construction and implementation are discussed in **Section 3.7**.
Migration of Aquatic Organisms	Construction and implementation of the Proposed Action and Alternative 1 would not adversely impact the migration of aquatic organisms.

TABLE 3.5-6
CONSISTENCY OF THE BUCKTAIL PROPOSED ACTION AND PROJECT ALTERNATIVES WITH TRINITY RIVER BENEFICIAL USES

Beneficial Water Uses	Project Consistency
Rare, Threatened or Endangered Species	Impacts to rare, threatened, or endangered species resulting from project construction and implementation are in **Section 3.7**, Vegetation, Wildlife, and Wetlands. No permanent, adverse effects to rare, threatened, or endangered species is anticipated to occur at the Bucktail site.
Spawning, Reproduction and/or Early Development of fish	Construction and implementation of the Proposed Action or Alternative 1 would not adversely spawning, reproduction, or early development of fish.
Aquaculture	Not applicable to the proposed Project.

Poker Bar Bridges

Impact 3.5-1: Construction of the proposed Trinity River Bridges Project could result in short-term temporary increases in turbidity and total suspended solids levels during construction. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative the new bridges would not be constructed at the Poker Bar site; therefore, no construction-related short-term increases in turbidity or total suspended solids levels would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Implementing the Proposed Action would increase turbidity and total suspended solids during construction in the river. During construction activities, potential increases in turbidity levels would likely be greatest during removal of the existing structure. Construction activities outside of the river channel, such as construction of new abutments and roadway approaches, could also increase turbidity levels if material is allowed to fall into the river channel. Fine sediments may be suspended in the river for several hours following construction activities. The extent of downstream sedimentation would be a function of the instream flow velocity and particle size. For example, fine-grained sediments like silts and clays can be carried several thousand feet downstream of the construction limits, while larger-sized sediments like sands and gravels would tend to drop out of the water column within several feet of the construction limit. No in-river construction activities are slated to occur under the Proposed Action.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Short term temporary increases in turbidity and total suspended solids levels resulting from construction of Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Proposed Action; Alternative 1

PB-1a: Turbidity increases associated with project construction activities shall not exceed the NCRWQCB water quality objectives for turbidity in the Trinity River Basin. The current threshold for turbidity levels in the Trinity River, as listed in the Basin Plan (NCRWQCB 2001), is summarized below.

- Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.

PB-1b: To ensure that turbidity levels do not exceed the threshold listed above during in-stream project construction activities; the BOR shall coordinate with the contractor to monitor turbidity levels 50 feet upstream and 300 feet downstream of the point of in-stream construction activities. Sampling procedures shall be performed in accordance with applicable permit requirements. Grab samples should be taken four times daily, when construction activities potentially have the greatest water quality impact (i.e., during abutment construction or bridge removal activities). In the event that monitoring data reveal that Basin Plan turbidity objectives are being exceeded, BOR shall modify its construction activities in whatever manner is necessary to reduce turbidity to levels consistent with those objectives.

PB-1c: Contractor shall prepare and implement an SWPPP that includes silt fences, sediment filters, dewatering activities, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls and dewatering activities should be adequate to minimize sediment inputs into the Trinity River until vegetation re-growth occurs. All sediment containment devices and erosion control devices will be inspected daily during the construction period to ensure that devices are properly functioning. Excavated and stored materials will be kept in upland sites with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland sites. All applicable erosion control standards will be required during stockpiling of materials.

Significance after Mitigation: *Less than Significant.*

Impact 3.5-2: Construction of the proposed Trinity River Bridges Project could potentially cause contamination of the Trinity River from hazardous materials spills. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative the new bridges would not be constructed at the Poker Bar site; therefore, no construction-related contamination of the Trinity River from hazardous materials spills would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Construction staging activities could potentially result in a spill of hazardous materials (i.e., oil, grease, gasoline, solvent) into the Trinity River. In addition, operation of construction equipment within or adjacent to the river will increase the risk of a spill of hazardous materials into the river (i.e., construction equipment leaking fluids). The potential spill of hazardous materials, including concrete used for arch construction, into the Trinity River could degrade water quality within the Trinity River and have deleterious effects on all life stages of salmonids present within close proximity to construction activities. **Section 3.15**, Hazardous Materials, evaluates potential effects associated with removal of the existing bridge structures, specifically lead-based paint, contaminated soils, and total recoverable petroleum hydrocarbons.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

The potential for contaminating the Trinity River with hazardous materials associated with construction of Alternative1 would be similar to the Proposed Action, although no concrete materials will be used in this alternative.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Proposed Action; Alternative 1

PB-2a: The BOR shall require that the bridge contractor prepare and implement a spill prevention and containment plan in accordance with applicable federal and state requirements.

PB-2b: The BOR shall include in the construction contract documents a requirement that any construction equipment that would come in contact with the Trinity River will need to be inspected daily for leaks prior to entering the flowing channel. External oil, grease, and mud will be removed from equipment using steam cleaning. Untreated wash and rinse water must be adequately treated prior to discharge if that is the desired disposal option.

PB-2c: The BOR shall include in the construction contract documents a requirement that hazardous materials, including fuels, oils, solvents, not be stored or transferred within 150 feet of the active Trinity River channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active river channel. In addition, the construction contractor shall be responsible for maintaining spill containment booms onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

Significance after Mitigation: *Less than Significant.*

Impact 3.5-3: Operation of the Trinity River Bridges Project would result in increased pollutant loads from bridges/roadway runoff into the Trinity River. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative the new bridges would not be constructed at the Poker Bar site; therefore, increased pollutant loads associated with project implementation would not occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

The operation and maintenance of roadways can contribute to a variety of pollutants that could degrade the quality of surface water and groundwater resources. Roadway runoff contains several pollutants that may affect the beneficial uses of surface water, including solids, heavy metals, nutrients, oils and greases, and other contaminants. Concentrations of these pollutants are locally variable, and are directly affected by traffic conditions, climate, timing of roadway maintenance, and adjacent land uses. The majority of the pollutants are contained in silt and clay particles. Roadway pollutants such as heavy metals, organics, and solids typically correlate directly with traffic volumes.

Implementation of the Proposed Action would not result create new impervious surface areas (i.e., new bridge structure and roadway approaches) because an existing roadway, bridges, and roadway approaches already exist at the

Bucktail site. Although the new structure will be capable of carrying any legal load vehicle, which could encourage increased transport of materials across the new bridge, increased traffic volumes resulting from implementation of the Proposed Action would be minor because the new bridge will remain under private ownership (see Transportation/Traffic Circulation, **Section 3.18**). Increased pollutant loads resulting from implementation of the Proposed Action would be less than significant.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

The potential for increased pollutant loads associated with implementation of Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Impact 3.5-4: Construction and operation of the Trinity River Bridges Project could result in increased stormwater runoff and subsequent potential for erosion. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative the new bridges would not be constructed at the Poker Bar site; therefore, stormwater runoff and subsequent potential for erosion would not increase.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Implementation of the Proposed Action would not result in an increase of impervious surface areas (i.e., structure and roadway approaches) that could subsequently generate additional stormwater runoff and potential for erosion because roadway approaches and existing bridge structures already exist at the Poker Bar site. No new development is expected to increase traffic or polluted stormwater runoff.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

The potential for increased stormwater runoff and potential for erosion associated with implementation of Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Impact 3.5-5: Construction and operation of the Trinity River Bridges Project could result in the degradation of Trinity River beneficial uses identified in the Basin Plan. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative the new bridges would not be constructed at the Poker Bar site; therefore, degradation of Trinity River beneficial uses identified in the Basin Plan would not occur. However, the beneficial effect of improving the conveyance of high flow events without bridge overtopping or increased backwater effect associated that would occur if the existing bridges were replaced would not be realized.

Proposed Action (Replacement Upstream with Two Single-Span Structures); Alternative 1 (Replacement Downstream with Two Single-Span Structures)

The consistency of the Proposed Action and project alternatives with Trinity River beneficial uses outlined in the Basin Plan (NCRWQCB 2001) is evaluated in **Table 3.5-7**.

TABLE 3.5-7
CONSISTENCY OF THE POKER BAR PROPOSED ACTION AND PROJECT ALTERNATIVES WITH TRINITY RIVER BENEFICIAL USES

Beneficial Water Uses	Project Consistency
Municipal and Domestic Supply	Interruptions of municipal or domestic supplies are discussed in **Section 3.17**, Public Services and Utilities/Energy. Construction and implementation of the Proposed Action and Alternative 1 could temporarily degrade a municipal or domestic water supply due to increases in turbidity and total suspended solids associated with construction activities. Implementation of Mitigation Measure PB-1, discussed previously in this section, would reduce this impact to a less than significant level.
Agricultural Supply	No agricultural uses have been identified in the project vicinity. Construction and implementation of the Proposed Action and Alternative 1 would not impact agricultural water supplies.
Industrial Service Supply	No industrial services have been identified in the project vicinity. Construction and implementation of the Proposed Action and Alternative 1 would not impact industrial service water supplies.
Groundwater Recharge	Construction and implementation of the Proposed Action and Alternative 1 would not impact groundwater recharge.
Freshwater Replenishment	Construction and implementation of the Proposed Action and Alternative 1 would not impact freshwater replenishment.
Water Contact Recreation	Impacts to recreation resulting from project construction and implementation are discussed in **Section 3.8**.
Non-Contact Recreation	Impacts to recreation resulting from project construction and implementation are discussed in **Section 3.8**.
Commercial and Sport Fishing	Impacts to recreation resulting from project construction and implementation are discussed in **Section 3.8**.
Cold Freshwater Habitat	Construction and implementation of the Proposed Action or Alternative 1 would not adversely impact cold freshwater habitat.
Wildlife Habitat	Impacts to wildlife resources resulting from project construction and implementation are discussed in **Section 3.7**.

TABLE 3.5-7
CONSISTENCY OF THE POKER BAR PROPOSED ACTION AND PROJECT ALTERNATIVES WITH TRINITY RIVER BENEFICIAL USES

Beneficial Water Uses	Project Consistency
Migration of Aquatic Organisms	Construction and implementation of the Proposed Action and Alternative 1 would not adversely impact the migration of aquatic organisms.
Rare, Threatened or Endangered Species	Impacts to rare, threatened, or endangered species resulting from project construction and implementation are discussed in **Section 3.7**, Vegetation, Wildlife, and Wetlands. No permanent, adverse effects to rare, threatened, or endangered species is anticipated to occur at the Poker Bar site.
Spawning, Reproduction and/or Early Development of fish	Construction and implementation of the Proposed Action or Alternative 1 would not adversely spawning, reproduction, or early development of fish.
Aquaculture	Not applicable to the proposed Project.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: *N/A*

Biggers Road Bridge

Impact 3.5-1: Construction of the proposed Trinity River Bridges Project could result in short-term temporary increases in turbidity and total suspended solids levels during construction. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative a new bridge will not be constructed at the Biggers Road site; therefore, no construction-related short-term increases in turbidity or total suspended solids levels would occur.

Proposed Action (Replacement Upstream)

Implementing the Proposed Action would increase turbidity and total suspended solids during construction in the river. During in-river construction activities, potential increases in turbidity levels would likely be greatest during bridge removal, including construction of an in-channel access ramp to facilitate removal activities. Fine sediments may be suspended in the river for several hours following ramp placement and bridge removal. The extent of downstream sedimentation would be a function of the instream flow velocity and particle size. For example, fine-grained sediments like silts and clays can be carried several thousand feet downstream of the construction limits, while larger-sized sediments like sands and gravels would tend to drop out of the water column within several feet of the construction limits.

In-river construction activities will be staged to minimize potential turbidity effects. These in-stream construction activities could result in short-term increases in turbidity and suspended solids concentrations in the water column that could potentially be in violation of the NCRWQCB's Basin Plan objectives for turbidity in the Trinity River. Increased turbidity and suspended solids levels could also adversely affect anadromous fish species that are known to occur in the Trinity River (refer to **Section 3.6**, Fishery Resources).

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Implementing Alternative 1 would increase turbidity and total suspended solids during construction in the river. During in-river construction activities, potential increases in turbidity levels would likely be greatest during bridge removal, including construction of an in-channel access ramp to facilitate removal activities. Fine sediments may be suspended in the river for several hours following ramp placement and bridge removal. Out-of-river activities such as construction of the retaining wall (including removal of riparian vegetation adjacent to the Trinity River) could also increase fine sediments and suspended solids in the river channel. In-river construction activities will be staged to minimize potential turbidity effects. These in-stream construction activities could result in short-term increases in turbidity and suspended solids concentrations in the water column that could potentially be in violation of the NCRWQCB's Basin Plan objectives for turbidity in the Trinity River. Increased turbidity and suspended solids levels could also adversely affect anadromous fish species that are known to occur in the Trinity River (refer to **Section 3.6**, Fishery Resources).

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Proposed Action; Alternative 1

BR-1a: Turbidity increases associated with project construction activities shall not exceed the NCRWQCB water quality objectives for turbidity in the Trinity River Basin. The current threshold for turbidity levels in the Trinity River, as listed in the Basin Plan (NCRWQCB 2001), is summarized below.

- Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof.

BR-1b: To ensure that turbidity levels do not exceed the threshold listed above during in-stream project construction activities; the BOR shall coordinate with the contractor to monitor turbidity levels 50 feet upstream and 300 feet downstream of the point of in-stream construction activities. Sampling procedures shall be performed in accordance with applicable permit requirements. Grab samples should be taken four times daily, when construction activities potentially have the greatest water quality impact (i.e., bridge removal, retaining wall construction, if applicable). In the event that monitoring data reveal that Basin Plan turbidity objectives are being exceeded, BOR shall modify its construction activities in whatever manner is necessary to reduce turbidity to levels consistent with those objectives.

BR-1c: Contractor shall prepare and implement an SWPPP that includes silt fences, sediment filters, dewatering activities, and routine monitoring to verify effectiveness. Proper implementation of erosion and sediment controls and dewatering activities should be adequate to minimize sediment inputs into the Trinity River until vegetation re-growth occurs. All sediment containment devices and erosion control devices will be inspected daily during the construction period to ensure that devices are properly functioning. Excavated

and stored materials will be kept in upland sites with erosion control properly installed and maintained. Excavated and stored materials will be staged in stable upland sites. All applicable erosion control standards will be required during stockpiling of materials.

Significance after Mitigation: *Less than Significant.*

Impact 3.5-2: Construction of the proposed Trinity River Bridges Project could potentially cause contamination of the Trinity River from hazardous materials spills. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative a new bridge will not be constructed at the Biggers Road site; therefore, no construction-related contamination of the Trinity River from hazardous materials spills would occur.

Proposed Action (Replacement Upstream)

Construction staging activities could potentially result in a spill of hazardous materials (i.e., oil, grease, gasoline, solvent) into the Trinity River. In addition, operation of construction equipment within or adjacent to the river will increase the risk of a spill of hazardous materials into the river (i.e., construction equipment leaking fluids). The potential spill of hazardous materials, including concrete used for pier footings, into the Trinity River could degrade water quality within the Trinity River and have deleterious effects on all life stages of salmonids present within close proximity to construction activities. **Section 3.15**, Hazardous Materials, evaluates potential effects associated with removal of the existing bridge structures, specifically lead-based paint, contaminated soils, and total recoverable petroleum hydrocarbons.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

The potential for contaminating the Trinity River with hazardous materials associated with construction of Alternative1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Proposed Action; Alternative 1

BR-2a: The BOR shall require that the bridge contractor prepare and implement a spill prevention and containment plan in accordance with applicable federal and state requirements.

BR-2b: The BOR shall include in the construction contract documents a requirement that any construction equipment that would come in contact with the Trinity River will need to be inspected daily for leaks prior to entering the flowing channel. External oil, grease, and mud will be removed from equipment using steam cleaning. Untreated wash and rinse water must be adequately treated prior to discharge if that is the desired disposal option.

BR-2c: The BOR shall include in the construction contract documents a requirement that hazardous materials, including fuels, oils, solvents, not be stored or transferred within 150 feet of the active Trinity River

channel. Areas for fuel storage, refueling, and servicing will be located at least 150 feet from the active river channel. In addition, the construction contractor shall be responsible for maintaining spill containment booms onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

Significance after Mitigation: *Less than Significant.*

Impact 3.5-3: Operation of the Trinity River Bridges Project would result in increased pollutant loads from bridges/roadway runoff into the Trinity River. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative a new bridge will not be constructed at the Biggers Road site; therefore, increased pollutant loads associated with project implementation would not occur.

Proposed Action (Replacement Upstream)

The operation and maintenance of roadways can contribute to a variety of pollutants that could degrade the quality of surface water and groundwater resources. Roadway runoff contains several pollutants that may affect the beneficial uses of surface water, including solids, heavy metals, nutrients, oils and greases, and other contaminants. Concentrations of these pollutants are locally variable, and are directly affected by traffic conditions, climate, timing of roadway maintenance, and adjacent land uses. The majority of the pollutants are contained in silt and clay particles. Roadway pollutants such as heavy metals, organics, and solids typically correlate directly with traffic volumes.

Implementation of the Proposed Action would result in a slight increase of impervious surface areas (i.e., new roadway approaches and a vehicle turnout) that could subsequently generate additional roadway-produced pollutants. Increased pollutant loads associated with these minor roadway improvements are considered less than significant because an existing bridge and roadway approaches are currently in place at the Biggers Road site. Although the new structure will be capable of carrying any legal load vehicle, which could encourage increased transport of materials across the new bridge, increased traffic volumes resulting from implementation of the Proposed Action would be minor because the new bridge will remain under private ownership (see Transportation/Traffic Circulation, **Section 3.18**).

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

The potential for increased pollutant loads associated with implementation of Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Impact 3.5-4: Construction and operation of the Trinity River Bridges Project could result in increased stormwater runoff and subsequent potential for erosion. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative a new bridge will not be constructed at the Biggers Road site; therefore, stormwater runoff and subsequent potential for erosion would not increase.

Proposed Action (Replacement Upstream)

Implementation of the Proposed Action would result in a slight increase of impervious surface areas (i.e., new roadway approaches and a vehicle turnout) that could subsequently generate additional stormwater runoff erosion potential at the project site. Increased pollutant loads associated with these minor roadway improvements are considered less than significant because an existing bridge and roadway approaches are currently in place at the Biggers Road site. Although the new structure will be capable of carrying any legal load vehicle, which could encourage increased transport of materials across the new bridge, increased traffic volumes resulting from implementation of the Proposed Action would be minor because the new bridge will remain under private ownership (see Transportation/Traffic Circulation, **Section 3.18**). No new development is expected to increase traffic or polluted stormwater runoff.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

The potential for increased pollutant loads associated with implementation of Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A

Impact 3.5-5: Construction and operation of the Trinity River Bridges Project could result in the degradation of Trinity River beneficial uses identified in the Basin Plan. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative a new bridge will not be constructed at the Biggers Road site; therefore, degradation of Trinity River beneficial uses identified in the Basin Plan would not occur. However, the beneficial effect of improving the conveyance of high flow events without bridge overtopping or increased backwater effect associated that would occur if the existing bridge was replaced would not be realized.

Proposed Action (Replacement Upstream); Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

The consistency of the Proposed Action and project alternatives with Trinity River beneficial uses outlined in the Basin Plan (NCRWQCB 2001) is evaluated in **Table 3.5-8**.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: *N/A*

TABLE 3.5-8
CONSISTENCY OF THE BIGGERS ROAD PROPOSED ACTION AND PROJECT ALTERNATIVES WITH TRINITY RIVER BENEFICIAL USES

Beneficial Water Uses	Project Consistency
Municipal and Domestic Supply	Interruptions of municipal or domestic supplies are discussed in **Section 3.17**, Public Services and Utilities/Energy. Construction and implementation of the Proposed Action and Alternative 1 could temporarily degrade a municipal or domestic water supply due to increases in turbidity and total suspended solids associated with construction activities. Implementation of Mitigation Measure BR-1, discussed previously in this section, would reduce this impact to a less than significant level.
Agricultural Supply	No agricultural uses have been identified in the project vicinity. Construction and implementation of the Proposed Action and Alternative 1 would not impact agricultural water supplies.
Industrial Service Supply	No industrial services have been identified in the project vicinity. Construction and implementation of the Proposed Action and Alternative 1 would not impact industrial service water supplies.
Groundwater Recharge	Construction and implementation of the Proposed Action and Alternative 1 would not impact groundwater recharge.
Freshwater Replenishment	Construction and implementation of the Proposed Action and Alternative 1 would not impact freshwater replenishment.
Water Contact Recreation	Impacts to recreation resulting from project construction and implementation are discussed in **Section 3.8**.
Non-Contact Recreation	Impacts to recreation resulting from project construction and implementation are discussed in **Section 3.8**.
Commercial and Sport Fishing	Impacts to recreation resulting from project construction and implementation are discussed in **Section 3.8**.
Cold Freshwater Habitat	Construction and implementation of the Proposed Action or Alternative 1 would not adversely impact cold freshwater habitat. The proposed Project would be consistent with any further restoration activities that may be implemented in the future as part of the overall Trinity River Mainstem Restoration Project.
Wildlife Habitat	Impacts to wildlife resources resulting from project construction and implementation are discussed in **Section 3.7**.
Migration of Aquatic Organisms	Construction and implementation of the Proposed Action and Alternative 1 would not adversely impact the migration of aquatic organisms. Construction and implementation of the Proposed Action or Alternative 1, would not adversely impact the migration of aquatic organisms. There will be a permanent benefit to migration of aquatic organisms since there will be two less piers/bents within the river channel.
Rare, Threatened or Endangered Species	Impacts to rare, threatened, or endangered species resulting from project construction and implementation are discussed in **Section 3.7**, Vegetation, Wildlife, and Wetlands. No permanent, adverse effects to rare, threatened, or endangered species is anticipated to occur at the Biggers Road site.
Spawning, Reproduction and/or Early Development of fish	Construction and implementation of the Proposed Action or Alternative 1 would not adversely spawning, reproduction, or early development of fish.
Aquaculture	Not applicable to the proposed Project.

SECTION 3.6

Fishery Resources

3.6 Fishery Resources

Fishery resources include fish populations, their habitats, and the harvest of those populations. This section discusses the existing environment within the Trinity River Basin in both a regional and site-specific context, with regard to native anadromous fish and resident native and non-native fish. The project-specific information contained in this section is a detailed summary of the information contained in the BA (**Appendix F**) that was prepared for this Project. Information on other biological resources is provided in Section 3.7, Vegetation, Wildlife, and Wetlands.

3.6.1 AFFECTED ENVIRONMENT/ENVIRONMENTAL SETTING

Regional Setting

Aquatic System

The TRD of the CVP influences the regional hydrology in large part. The TRD was authorized in 1955 and began operating in 1964. The TRD consists of a series of dams, tunnels, and power plants that export water from the Trinity River Basin into the Sacramento River Basin. The local hydrology associated with the project sites is subject to accretion flow from tributaries to the Trinity River. Primary tributaries that contribute to the Trinity River within the project study area include Rush Creek and Grass Valley Creek.

The Trinity River drains a watershed of approximately 2,965 square miles, about one-quarter of which is above Lewiston Dam. Elevations range from 8,888 feet msl at Sawtooth Mountain in the Trinity Alps to 300 feet msl at the confluence of the Trinity and Klamath Rivers. The climate is Mediterranean with an average precipitation of 62 inches per year; throughout the basin it varies from 30-70 inches annually, which typically occurs as rain in the lower elevations and snow at the higher elevations.

The Trinity River is the largest tributary to the Klamath River. The mainstem Trinity River flows a total of 170 miles from its headwaters to its confluence with Klamath River at Weitchpec, 43.5 miles upstream from the Pacific Ocean. Trinity and Lewiston Dams currently regulate Trinity River flows below RM 112 (112 miles upstream of the Trinity River-Klamath River confluence). Lewiston Dam marks the upstream limit of anadromous salmonid access.

Streamflow is regulated at the Trinity Reservoir. Immediately downstream of Trinity Dam is Lewiston Reservoir, a relatively small re-regulation reservoir and diversion point for trans-basin water diversion to the CVP. For the first 10 years of TRD operations (1964-1973) CVP diversions delivered nearly 90 percent of the Trinity River annual water yield (above Lewiston Dam) into the Sacramento River for urban and agricultural use. After 1981, river releases were increased from 120,500 afa to a maximum of 340,000 afa, such that the diversion percentage was reduced to roughly 70 percent.

Prior to the completion of the TRD, flows in the Trinity River were highly variable, ranging from summer flows of 25 cfs to extreme winter events with instantaneous peak flows greater than 100,000 cfs. Annual hydrographs typically followed a seasonal pattern of high winter and spring flows followed by low summer and fall flows. Total annual flow volumes at Lewiston ranged from 0.27-2.7 maf, with an average of 1.25 maf.

Since full TRD operations began in 1964, an average of 74 percent of the river's flows has been exported annually, or about 988,000 afa. In recent years (1985-1997) annual exports have decreased to an average of 732,400 af.

Conversely, post-dam Trinity River flows at Lewiston have been as low as 120,500 afa (10 percent of pre-dam levels).

Native Anadromous Fish Species

The native anadromous salmonid species of interest in the mainstem Trinity River and its tributaries include chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*Oncorhynchus kisutch*), and steelhead (*Oncorhynchus mykiss irideus)*. Of the three species, there are two races of chinook salmon (spring- and fall-run) and three races of steelhead (summer-, fall-, and winter-run), which are differentiated based on the season of migration into the river. Some life history and habitat requirements of these species and the spawning populations within species are presented in **Table 3.6-1**.

TABLE 3.6-1
LIFE HISTORY AND HABITAT NEEDS FOR ANADROMOUS SALMONID FISH IN THE TRINITY RIVER BASIN

Species	Migration	Spawning	Rearing	Rearing Habitat Conditions
Spring-run Chinook	Spring - Summer	September-November	Winter-Spring-Summer	Shallow, slow-moving waters adjacent to higher water velocities for feeding.
Fall-run Chinook	Fall	October-December	Winter-Spring	Shallow, slow-moving waters adjacent to higher water velocities for feeding.
Winter-run Steelhead	Winter	February-April	Year-round	Areas of clean cobble where there is refuge from high velocities; juveniles overwinter for 1-2 or more years.
Summer-run Steelhead	Spring-Summer	December-April	Year-round	Areas of clean cobble where there is refuge from high velocities; juveniles overwinter for 1-2 or more years.
Fall-run Steelhead (includes 'half-pounder' life history)	Late-summer/Fall	December-April	Year-round	Areas of clean cobble where there is refuge from high velocities; juveniles overwinter for 1-2 or more years.
Coho	October-December	November-January	Year-round	Backwater areas of slow water and pool margins; juveniles overwinter 1 year.

Source: Leidy and Leidy 1984; USFWS et al. 2000a

All anadromous species begin their life in fresh water, migrate to the ocean to rear and mature, and return to spawn in fresh water. Although the three species have generally similar life histories (**Figure 3.6-1**), they differ in the time of year they migrate and spawn, as well as when egg incubation typically occurs (**Figure 3.6-2**).

Adequate flows, temperatures, water depths and velocities, appropriate spawning and rearing substrates (e.g., riverbed gravels), and availability of instream cover and food are critical for the production of all anadromous salmonids. Spring chinook salmon and summer steelhead also need long-term adult holding habitat in which pool size and depth, temperature, cover, and proximity to spawning gravel are important requirements. Newly emerged fry and juveniles of all species require rearing habitat with low velocities, open cobble substrate, and cool water temperatures. Emigration of smolts to the ocean and the immigration of spawning adults require adequately timed flows with the appropriate temperature, depth, and velocity.

Native non-salmonid anadromous species found in the Trinity River Basin include green sturgeon (*Acipenser medirostris*), white sturgeon (*Acipenser transmontanus*), and Pacific lamprey (*Lampetra tridentata*). These fish spend their early life stages in fresh water, migrate to the ocean for maturation, and return to their natal stream to spawn (**Table 3.6-2**). Status information on native non-salmonid anadromous species residing in the Trinity River Basin is very limited. However, the Klamath/Trinity River Basin is known to contain the largest spawning population of green sturgeon in California. In contrast, only small runs of white sturgeon occur.

TABLE 3.6-2
LIFE HISTORY AND HABITAT NEEDS FOR NON-SALMONID NATIVE ANADROMOUS FISH IN THE TRINITY RIVER BASIN

Species	Migration	Spawning	Rearing	Rearing Habitat Conditions
Pacific Lamprey	April-July	Spring-Early Summer	Year-round	Developing larvae burrow into silty river-bottom substrates, where they remain for 4-5 years before emigrating to the ocean.
Green Sturgeon White Sturgeon	February-July	March-July	Year-round	Juveniles inhabit estuarine environments for 4-6 years before migrating to the ocean.
Eulachon	March-April	March-April	--	Adhesive eggs stick to bottom until hatched; larvae quickly transported to ocean.

Source: USFWS et al. 2000a

Trinity River Restoration Program Goals

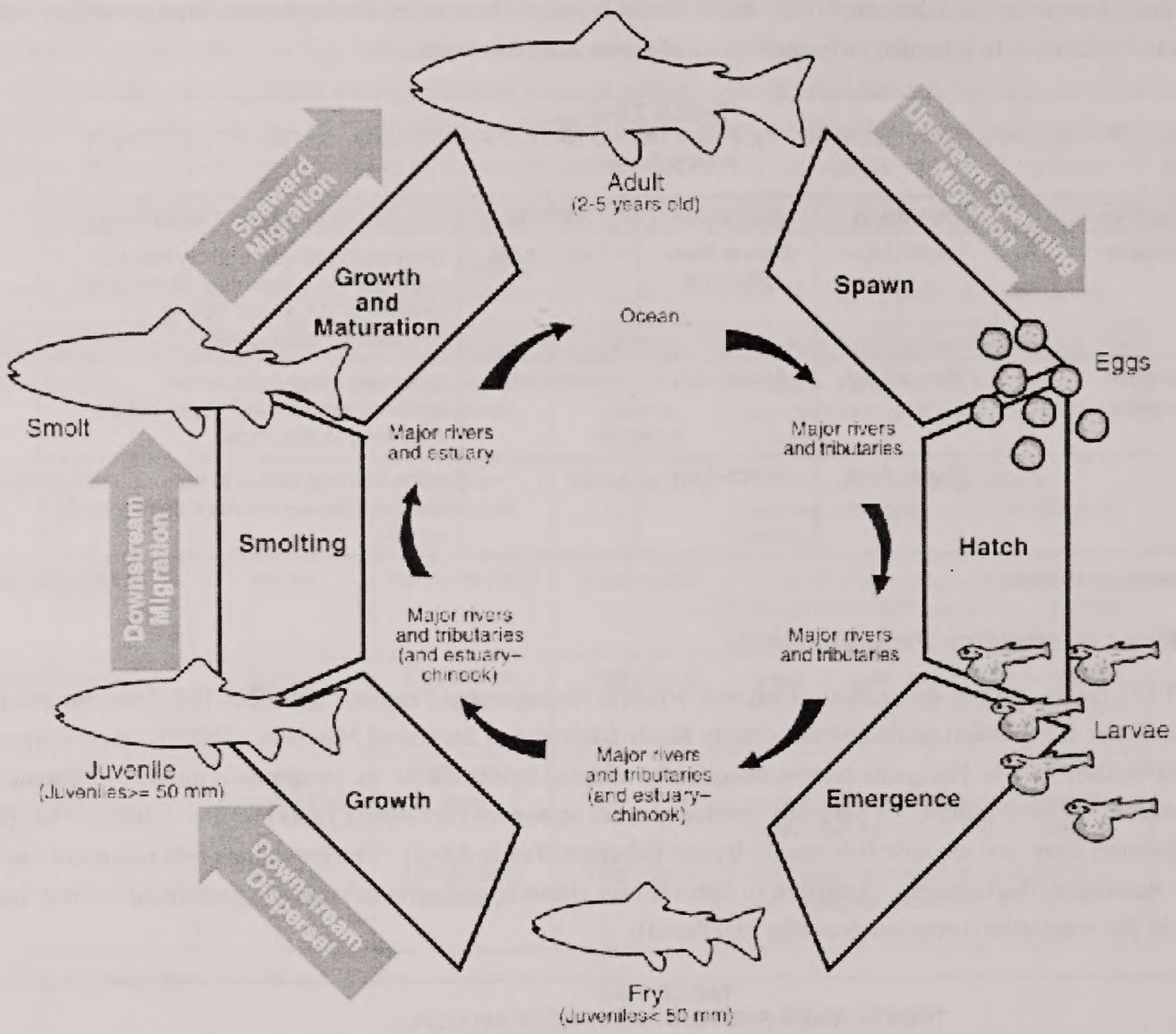
The 1983 EIS on the Trinity River Basin Fish and Wildlife Management Program (USFWS 1983) documented the in-river spawner escapement goals and the Trinity River Salmon and Steelhead Hatchery (TRSSH) production goals developed by the CDFG. The goals were subsequently adopted by the TRRP as escapement numbers. The in-river goals represent the total number of naturally produced adult spawners (excluding jacks) for the Trinity River Basin below Lewiston Dam and exclude fish caught by the fisheries (**Table 3.6-3**). The hatchery goals represent numbers of adult fish needed by the hatchery, exclusive of fisheries for chinook and coho salmon (an undefined in-river harvest is included in the restoration program goals for steelhead).

TABLE 3.6-3
TRINITY RIVER RESTORATION PROGRAM GOALS

Species	In-river Spawner Goals	Hatchery Goals	Total
Fall-run Chinook	62,000	9,000	71,000
Spring-run Chinook	6,000	3,000	9,000
Coho	1,400	2,100	3,500
Steelhead	40,000	10,000	50,000

Source: USFWS et al. 2000a

In-river spawner escapement is the number of fish returning to spawning grounds, which consists of two subgroups: naturally-produced fish and hatchery-produced fish. However, hatchery-produced fish are not considered to contribute towards the in-river spawner escapement goals of the TRRP, although their offspring do (i.e., if



10006 - Trinity River Bridge Replacement/Graphics/Fig_3.6-1.ai 02/06/03 VB Source: Trinity River Flow Draft EIR

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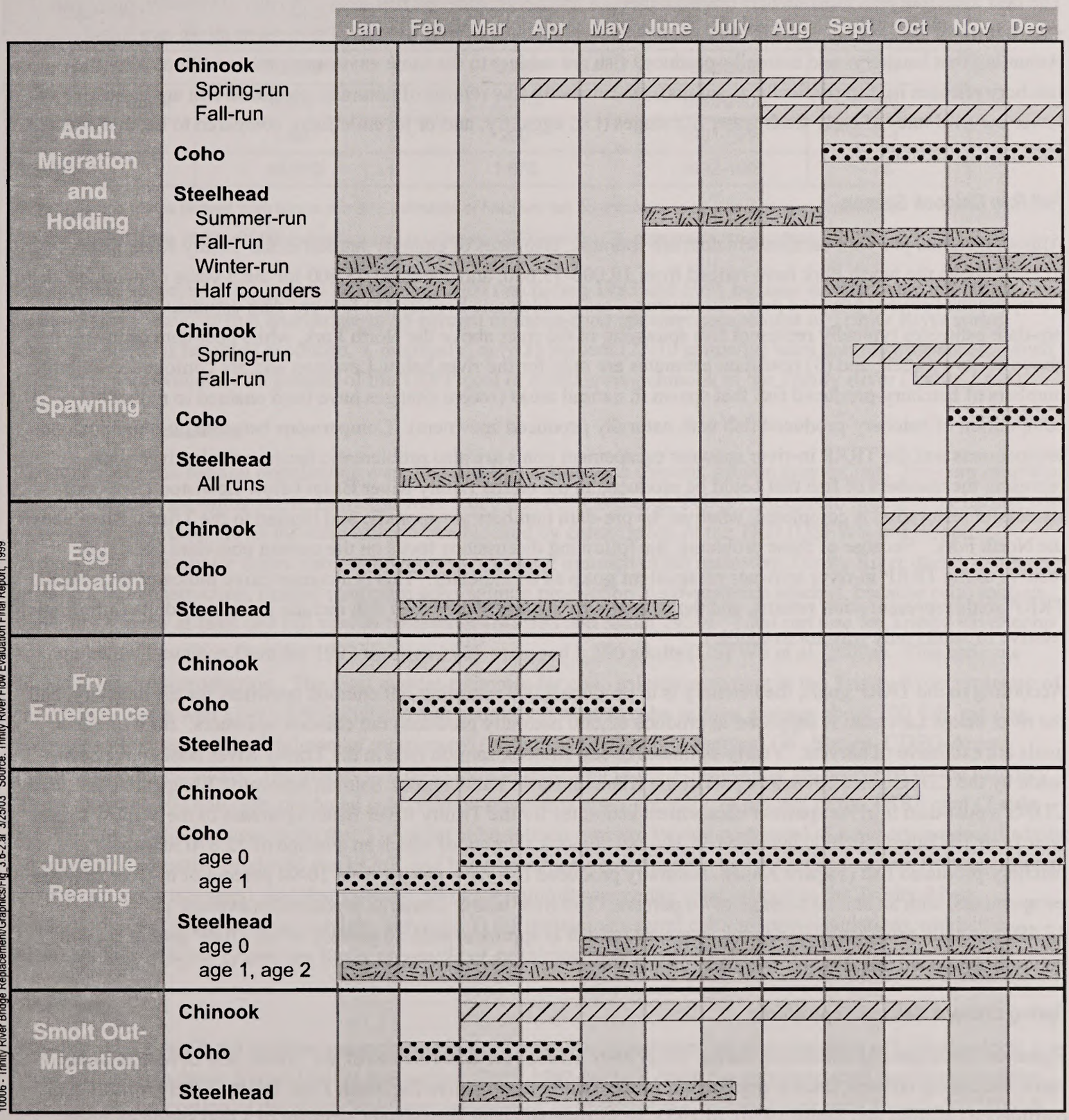
Figure 3.6-1
General Life Cycle of Anadromous Salmonids



10006 - Trinity River Bridge Replacement/Graphics/Fig_3.6-2.ai 3/25/03 Source: Trinity River Flow Evaluation Final Report, 1999

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Figure 3.6-2
Trinity River Anadromous Salmonid Life Stage Periodicity

hatchery-produced fish spawn in-river and their offspring survive to return to spawn, these offspring are naturally produced by definition).

The best available data indicate that large numbers of hatchery-produced fish spawn in-river. Typically, more fish spawn in-river than are spawned at the hatchery, and relatively fewer in-river eggs survive to return as adults. Assuming that hatchery- and naturally-produced fish are subject to the same environmental conditions after the hatchery releases its fish (typically as smolts), the relatively low returns of naturally-produced fish are indicative of lower survival rates of early fresh water life stages (i.e., eggs, fry, and/or juvenile fish), compared to hatchery-reared fish.

Fall-Run Chinook Salmon

Although annual pre-dam escapement data are sporadic, estimates of chinook salmon in the Trinity River prior to 1964 above the North Fork have ranged from 19,000-75,600, and averaged 45,600 for the 5 years of available data. Comparisons between pre- and post-dam averages are problematic because (1) few pre-dam estimates exist; (2) pre-dam estimates typically represent fish spawning in the river above the North Fork, while post-dam estimates are above Willow Creek; and (3) post-dam estimates are only for the river below Lewiston and are confounded by large numbers of hatchery-produced fish that spawn in natural areas (recent changes have been enacted to reduce competition of hatchery-produced fish with naturally produced spawners). Comparisons between pre-dam escapements and the TRRP in-river spawner escapement goals are also problematic because the in-river goals represent the numbers of fish that could be produced in the entire Trinity River Basin below Lewiston Dam once successful restoration is completed, whereas the pre-dam numbers are sporadic and limited to the Trinity River above the North Fork. Because of these problems, the following discussions focus on the current post-dam estimates relative to the TRRP in-river spawner escapement goals as an indicator. This is a conservative indicator because the TRRP goals represent adult returns, and the numbers for naturally produced fish include jacks and adults (information relative to adults only was not available).

According to the TRRP goals, the hatchery is to produce 9,000 returning fall chinook spawners for the hatchery, and the river below Lewiston is supposed to produce 62,000 naturally produced fall chinook spawners. Both of these goals are exclusive of harvest. Yearly estimates of fall chinook salmon runs in the Trinity River Basin have been made by the CDFG since 1978, as a part of the Klamath Basin Fall Chinook Salmon Spawning Escapement Estimate. CDFG's post-dam in-river spawner escapement estimates for the Trinity River Basin upstream of the Willow Creek weir from 1982 through 2000 averaged 35,360 fall chinook salmon, of which an average of 22,870 fish are hatchery-produced fish (**Figure 3.6-3**). Naturally produced fish have ranged from 10-94 percent of in-river spawner escapements, with an annual average of 46 percent. The river below Lewiston produced an average of 12,490 naturally produced fall chinook spawners, which is approximately 20 percent of the TRRP goal of 62,000 naturally produced fall chinook salmon (**Table 3.6-4**).

Spring Chinook Salmon Populations

Fisheries investigations conducted during 1942-1946, prior to the construction of the Trinity and Lewiston Dams, identified spring chinook salmon populations in the Trinity River above the North Fork Trinity River (North Fork) confluence (Moffett and Smith 1950). In 1955, an in-river spawner escapement estimate of 3,000 spring chinook salmon upstream of Lewiston was reported by CDFG (USFWS et al. 2000a).

TABLE 3.6-4
COMPARISON OF TRRP IN-RIVER SPAWNER ESCAPEMENT GOALS TO AVERAGE NUMBERS OF NATURALLY-PRODUCED FISH

Species	TRRP In-river Spawner Escapement Goals	Average In-river Escapement of Naturally Produced Fish*	Years of Available Data*	Percent of TRRP Goal Met
Fall-run Chinook	62,000	12,490	1982-2000	20
Spring-run Chinook	6,000	2,910	1982-2000	49
Coho	1,400	200	1991-1995	14
Steelhead	40,000	1,870	1992-1996	5

*Note: Average values derived from annual run-size estimates of hatchery fish contributions to total spawning escapements.

Source: USFWS et al. 2000a; CDFG preliminary data (W. Sinnen, CDFG-Arcata, CA, personal communication).

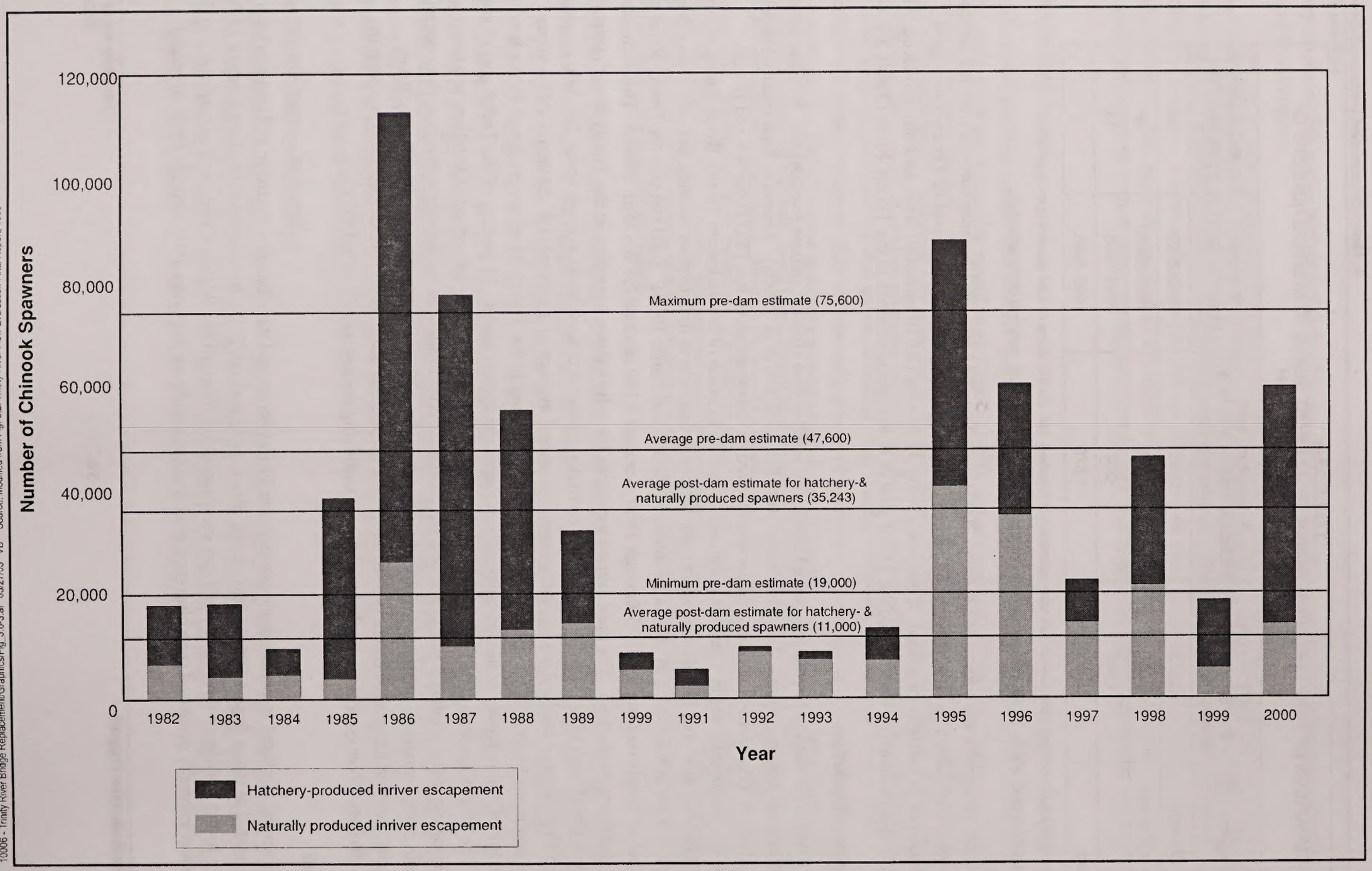
Escapement surveys for the years 1982 through 2000 (excluding 1983 and 1995 because surveys were not conducted in those years) indicate that an average of 65 percent of the in-river spawner escapement of Trinity River spring chinook salmon is hatchery produced. Conversely, only 35 percent (2,910 annually) were naturally produced, which represents approximately 49 percent of the TRRP goal of 6,000 spring chinook in the Trinity River (**Table 3.6-4**).

Coho Salmon Populations

Trinity River coho salmon populations were historically smaller than chinook salmon populations. Pre-dam estimates for coho salmon spawning above Lewiston were 5,000 fish (USFWS et al. 2000a). Access to high quality habitat with year-round cold, clear flows for coho salmon was blocked by construction of the TRD (USFWS and Hoopa Tribe 1999). Seasonally warm water temperatures occurring in much of the mainstem Trinity River during summer, prior to TRD construction, limited mainstem coho salmon production in downstream reaches, because coho salmon generally rear for at least one full year in freshwater (Moffett and Smith 1950). Total run size for Trinity River coho salmon below Lewiston Dam for 1973 through 1980 averaged 3,300 adults (USFWS et al. 2000a). This estimate includes hatchery production. The most current estimates for coho salmon spawning in the Trinity River upstream of the Willow Creek weir (1991-1995) indicate that naturally produced coho salmon average about 200 fish, ranging from 0 to 14 percent of the total annual escapement (an annual average of 3 percent) (W. Sinnen, CDFG-Arcata, personal communication). The majority of coho salmon spawning in the Trinity River are produced by the hatchery. The average of 200 naturally produced coho salmon represents approximately 14 percent of the TRRP goal (**Table 3.6-4**). The NMFS has concluded that 1) current coho salmon runs are largely composed of hatchery-produced adults; 2) remaining naturally-produced stocks are, and have been, heavily influenced by hatcheries (such as from occasional inter-basin stock transfers), and that virtually all of the naturally spawning coho salmon in the Trinity River, particularly, are first generation hatchery fish; and 3) the remaining natural coho salmon populations within the Klamath/Trinity River system are likely incapable of sustaining themselves (NMFS 1997).

Steelhead

Pre-dam winter steelhead spawner escapements in the Trinity River and its tributaries upstream of Lewiston have been estimated to range from 6,900-24,000 adults. From 1992 through 2000, the estimated total escapement of the fall/early winter portion of the winter steelhead escapement upstream of the Willow Creek weir averaged 4,270 fish. Estimates of naturally produced spawning steelhead, available only for the years 1992 through 1996, averaged



10006 - Trinity River Bridge Replacement/Graphics/Fig. 3.6-3.ai 03/27/03 VB Source: Modified from Fig. 3.2, Trinity River Flow Evaluation Final Report, 1999

Trinity River Bridges Project

North State Resources, Inc.

Figure 3.6-3
Post-TRD Fall-Run Chinook Spawner Escapements

1,870 fish upstream of the Willow Creek weir (surveys from fall and early winter period only). This average represents approximately five percent of the TRRP in-river spawner escapement goal of 40,000 adult steelhead (**Table 3.6-4**). Estimates for the remaining winter portion of the escapement are unavailable because increased river flows render fish-counting weirs inoperable.

Pre-dam summer steelhead spawner escapements for the Trinity River upstream of Lewiston were estimated to average 8,000 adults annually. Recent (1985-2002) post-dam CDFG/U.S. Forest Service (USFS) estimates have ranged from 20 to 2,575 adult summer steelhead returning to the tributaries and mainstem Trinity River (CDFG 1997, unpublished data; USFS 2002, unpublished data). The TRRP escapement goals do not establish specific targets for summer steelhead in the Trinity River, nor does the TRSSH mitigate specifically for summer steelhead.

Adult summer steelhead primarily hold in the headwaters of mainstem Trinity tributaries during the summer months, and subsequently spawn in the following late winter/early spring. Some Trinity River steelhead return to the river 4-6 months after first emigrating to the ocean. Upon their return these fish are known as "half-pounders." They feed in the river but do not spawn. They subsequently return to the ocean before returning to spawn. When in the "half-pounder" phase, these fish are not counted as part of the escapement, but they are important to the sport fishery.

Trinity River Salmon and Steelhead Hatchery

The TRSSH is operated by CDFG and funded by BOR to mitigate for the loss of salmonid production above Lewiston Dam. TRSSH's current goals are to release sufficient juveniles to provide for returns to the hatchery of 12,000 chinook (3,000 spring and 9,000 fall), 2,100 coho, and 10,000 steelhead through artificial propagation. Concerns regarding the potential impacts of hatchery operations on naturally produced populations of the Klamath River Basin (including the Trinity River) prompted the CDFG to institute new hatchery operations in 1996 to minimize future impacts. Additionally, further review of hatchery operations was conducted during 1999-2000 with recommendations for 1) periodic evaluation of coho salmon production levels required to support recovery of Southern Oregon / Northern California Coasts (SONCC) ESU coho, and 2) evaluation of spawning and broodstock selection practices for maintaining genetic separation of spring- and fall-run chinook salmon (CDFG and NMFS 2001).

Fish Harvest

The harvest of Klamath River Basin fall chinook salmon (including Trinity River Basin) is managed jointly by the CDFG, Oregon Department of Fish and Wildlife, the Commission, Yurok Tribe, HVT, NMFS, and the U.S. Bureau of Indian Affairs (BIA). The Pacific Fisheries Management Council (PFMC) and the Klamath Fisheries Management Council (KFMC) are allocation forums for the ocean and ocean/ in-river fisheries, respectively. The mixed-stock ocean population is harvested by commercial and sport fisheries; and the in-river population is harvested by tribal (ceremonial, subsistence, and commercial) and sport fisheries. Chinook salmon harvest (both fall and spring) includes both naturally produced and hatchery-produced fish. Commercial and sport harvest of coho salmon was incrementally restricted in California ocean and inland waters since 1994, resulting in statewide harvest prohibitions within the last five years, including barbless hooks and "catch and release only." Steelhead are rarely caught in the ocean commercial and sport fisheries, but are harvested by the in-river tribal and sport fisheries. Historically, Klamath/Trinity River chinook and coho populations have been harvested in the ocean from Santa Barbara County, California, to the Oregon/Washington border. Ocean harvest of naturally produced salmon may have been sufficient in the late 1970s to cause declines in Klamath River Basin (including Trinity River) populations, but, based on the

best available data, fall chinook harvest management restrictions implemented since 1986 have decreased harvest impacts to levels believed to be sustainable.

Habitat Conditions

Construction and operation of the TRD, combined with watershed erosion, large-scale gold dredging, and other harmful land management activities, have caused major changes in habitat conditions in the Trinity River. Factors that have resulted in adverse effects on fish habitat include

- obstruction to river reaches upstream of Lewiston Dam;
- changes to quantity and timing of flows;
- changes in channel geomorphology;
- changes in substrate composition caused by addition of fine sediments and restriction of gravel recruitment; and
- changes in water temperature.

The TRD dams blocked access to 59 miles of chinook salmon habitat, 109 miles of steelhead habitat, and an undetermined amount of coho salmon habitat (USFWS 1994). Much of this habitat was prime spawning and rearing habitat. In the case of the chinook, it represented 50 percent of spawning habitat in the basin. As early as 1980, overall decline in spawning habitat was estimated at 80-90 percent (USFWS 1980). Furthermore, elimination of the upstream reaches greatly reduced the diversity of the entire river system, thereby reducing habitat choices for salmonids.

For the first 21 years of TRD operations (1964-1985), Lewiston Dam releases to the Trinity River averaged only 21 percent of the natural river inflow. The volume of water initially set aside for Trinity River fishery resources during this time was 120,000 af, which was only exceeded during extreme storm events or for fishery studies. Perhaps more significantly, the peak winter and spring flows were eliminated or greatly reduced. The harmful effects of the reduced flows were manifested in several ways, including changes to channel geomorphology, substrate composition, and water temperatures.

Flow alteration and reduction (coupled with sediment from mining, road construction, and natural causes) are blamed for reduction of Trinity River steelhead runs downstream from Lewiston Dam and adverse changes in channel morphology and stream vegetation (NCRWQCB 1989). Ultimately, the reduction in flows has lead to a reduction in habitat. For example, spawning habitat losses have been estimated to be 80 percent in the first two miles below Grass Valley Creek, and 50 percent in the six miles downstream of that confluence (USFWS 1994).

Reduced river flows, increases in fine sediment input, and reductions in coarse sediment recruitment are the primary factors in changes to channel geomorphology resulting in the reduced quality, quantity, and suitability of fish habitat and reduced survival of freshwater life stages. The altered channel geomorphology reduced the number and quality of alternate bar sequences. Important salmonid habitats associated with alternate bars include pools that provide cover from predators and cool resting places for juveniles and adults; gravelly riffles where adults typically spawn; open gravel/cobble bars that create shallow, low-velocity zones important for emerging fry; and slack-water habitats for rearing juveniles.

Since TRD operation, the Trinity River has become channelized (i.e., the river banks have become more vertical, and there is little lateral movement of the channel within the floodplain). Consistently low river flows allowed the encroachment and establishment of riparian vegetation. The roots of the vegetation, which bound spawning gravel, and the stalks of the vegetation, which encouraged deposition of fine sediment, led to the formation of sand berms along the river banks. This encroachment of riparian vegetation and subsequent berm formation further narrowed the channel and reduced shallow, low-velocity salmonid rearing habitat and habitat diversity. Changes in substrate composition have occurred because of increases in fine sediment (from increased watershed erosion and attenuation of sediment-transporting flows) and the reduction of coarse sediment (e.g., gravel) recruitment (due to the dams). Fine sediment fills in spaces between gravels and cobbles, which inhibits the percolation of water through these areas, degrading and reducing available spawning habitats. Sedimentation of spawning areas can inhibit flow (and thus oxygen) to incubating eggs as well as create an impenetrable barrier that prevents salmon sac-fry from emerging from their gravel nest. Accumulation of fine sediments can also decrease the amount of space between gravel and cobble, thereby decreasing the amount of available habitat for overwintering juvenile coho salmon and steelhead that burrow into the substrate. Sedimentation may also decrease aquatic invertebrate production and diversity, thereby limiting the primary food source for juvenile salmonids.

Construction and operation of the TRD changed the thermal diversity available to Trinity River anadromous salmonids. The dams blocked access to the upstream reaches that are dominated by snowmelt runoff and remain cool throughout the year. Prior to the dam, these areas provided important juvenile rearing and adult holding habitats for salmonids when the majority of the lower mainstem habitats (i.e., below Lewiston) had likely become too warm. The upstream tributaries (dominated by snowmelt) provided increased flows and decreased temperatures during the spring and early summer that aided smolt emigration through much of the mainstem. Because these habitats are now blocked by the TRD, and much of the snowmelt is retained in the TRD reservoirs, it is necessary to artificially maintain cooler temperatures below the dam than those that existed prior to the dam. In other words, the mainstem below the dam must now function thermally like the upstream reaches and tributaries (for anadromous salmonids). Exacerbating the problem is the decrease in geomorphic diversity below the dam. Prior to the TRD, water temperatures in the deep mainstem pools stratified; bottom layers were documented as much as 7 °F cooler than upper layers (Moffett and Smith 1950). The cool temperatures at the bottom of the pools provided important thermal refugia for migrating adult and rearing juvenile salmonids. The altered flow regime and channel geomorphology decreased or eliminated the temperature stratification in pools in the summer/early fall months. Although average post-dam monthly water temperatures at Lewiston are cooler than pre-dam temperatures during June to November, this benefit has not fully compensated for the lost thermal diversity in the system (i.e., above the dams) or for the reduction in stratified pools.

Habitat Restoration Projects

Since the early 1980s, the Trinity River Basin Fish and Wildlife Restoration Program has conducted a variety of restoration activities in the mainstem Trinity River and its tributaries. Some activities conducted in tributaries include watershed restoration work, as well as habitat enhancement projects, and dam construction and pool dredging in Grass Valley Creek to decrease the amount of fine sediment entering the mainstem Trinity River. Restoration activities that have been implemented in the mainstem include gravel placement, pool dredging, and construction of several channel rehabilitation projects (side channels and bank rehabilitation of point bars).

During 1990-1993, the Trinity River Basin Fish and Wildlife Restoration Program constructed 27 channel rehabilitation projects on the mainstem Trinity River between Lewiston Dam and the North Fork: 18 side-channel projects and nine bank rehabilitation projects (also known as feathered-edge projects). Monitoring documented chinook salmon spawning within the constructed side-channels. Observations also indicate that the side channels are used extensively during the spring by rearing chinook salmon juveniles. The nine bank rehabilitation projects between Lewiston Dam and the North Fork were constructed by physically removing vegetated sand berms along the bank to restore the channel to a pre-dam configuration. Channel rehabilitation sites are significantly wider and shallower than corresponding control sites at intermediate and high flows. Along with promoting formation of alluvial features characteristic of unregulated rivers, channel rehabilitation projects have been shown to increase the amount and diversity of habitat for adult and juvenile salmon and steelhead. During recent investigations, salmonid fry habitat indexes were greater at rehabilitation sites than at corresponding control sites. Abundance indices for chinook salmon fry were also greater at rehabilitation sites than at control sites, suggesting greater habitat use at these sites. Spawning surveys at project locations have also shown increased use of these areas by spawning chinook salmon.

Resident Native and Non-Native Fish Species

Resident native fish species found in the Trinity River Basin include gamefish such as rainbow trout (*Oncorhynchus mykiss*) and non-gamefish such as speckled dace (*Rhinichthys osculus*), Klamath smallscale sucker (*Catostomus rimiculus*), three-spined stickleback (*Gasterosteus aculeatus*), coast range sculpin (*Cottus aleuticus*), and marbled sculpin (*Cottus klamathensis*). The abundance of resident native species, and the factors affecting their abundance within the basin, is not well understood; however, all these species evolved and existed in the pre-dam Trinity River and are presumably adapted to those conditions.

Non-native fish species found in the Trinity and Klamath River basins include striped bass (*Morone saxatilus*), American shad (*Alosa sapidissima*), brown bullhead (*Ameiurus nebulosus*), green sunfish (*Lepomis cyanellus*), Klamath lamprey (*Lampetra similis*), brown trout (*Salmo trutta*), and brook trout (*Salvelinus fontinalis*) (USFWS unpublished data). Striped bass have only recently been reported to occur in the Trinity and Klamath River basins; reports are rare. American shad are known to occur in the lowermost portions of the Trinity River Basin, but are primarily found in the Lower Klamath River Basin. Anadromous brown trout were propagated in the TRSSH until 1977 when this practice was discontinued because of the small numbers and the lack of anadromous characteristics of fish entering the hatchery. Currently, brown trout are largely limited to the upper portions of the river, although some brown trout exhibit anadromous characteristics. Brook trout provide a significant sport fishery in the tributary streams and high elevation lakes of the Trinity River Basin. Its life cycle and habitat requirements are similar to that of brown trout.

The structure and abundance of populations for these species in the Trinity and Lower Klamath River basins is unknown. Factors that affect their abundance in the Trinity and Lower Klamath River basins have not been studied and remain unknown.

Special-Status Fish Species

For the purposes of this evaluation, listed fish species include taxa that are (1) designated as threatened or endangered by the state or federal governments (i.e., "listed species"); or (2) are proposed or petitioned for federal threatened or

endangered status; and/or (3) are state or federal candidates for threatened or endangered status. "Other" special-status fish species are identified by the USFWS as Species of Concern and/or are identified by CDFG as Species of Special Concern and/or California Fully Protected Species. **Table 3.6-5** provides a list of special-status fish species that were considered during the environmental analysis. This list was compiled by performing a CNDDB database search; informal consultations with the CDFG, USFWS, and NMFS; and a review of biological literature for the project region.

The SONCC ESU of coho salmon was listed as threatened pursuant to the ESA on April 25, 1997. This listing includes coho from the Trinity River and Klamath River Basins. Critical habitat for this ESU was designated on May 5, 1999. Critical habitat is designated to include all river reaches accessible to listed coho salmon between Cape Blanco and Punta Gorda. Excluded are areas above specific dams or above longstanding, naturally impassable barriers (i.e., natural waterfalls in existence for at least several hundred years). In the Trinity River Basin, designated critical habitat for the SONCC ESU coho salmon consists of the water, substrate, and adjacent riparian zone of those estuarine and riverine reaches (including off-channel habitats and accessible tributaries) downstream of Lewiston Dam (CFR Vol. 64, No. 86, May 5, 1999).

On July 28, 2000, the Commission received a petition to list coho salmon north of San Francisco as an endangered species under provisions of the California Endangered Species Act (CESA). The Commission referred the petition to CDFG on August 7, 2000, for evaluation. The CDFG found that the information in the petition was sufficient to indicate the action may be warranted, and the Commission accepted the petition on April 5, 2001. On April 27, 2001, the Commission published a Notice of Findings in the California Regulatory Notice Register declaring coho salmon a candidate species, thereby starting the candidacy period. In April 2002 CDFG published a status review, in which they recommended that the SONCC ESU coho salmon be listed as threatened under CESA. The Commission accepted the findings of CDFG but placed the listing of the species on hold for one year, during which time the CDFG must decide upon interim protection measures to implement for coho during the recovery-planning period and must subsequently prepare a recovery plan for the species.

The green sturgeon was petitioned for listing on June 12, 2001. After a lengthy review, NMFS determined that the species does not warrant listing in a status review published on January 29, 2003. However, the green sturgeon remains a candidate species due to remaining uncertainty regarding the status of populations that inhabit the west coast of North America. Recently, several environmental groups filed a lawsuit in federal court protesting NMFS's findings in this matter.

The Pacific lamprey, along with three other lamprey species, was recently petitioned for listing in January 2003. NMFS will review the petition to determine if it presents substantial scientific and commercial information to indicate whether the petitioned action may be warranted. Publication of the NMFS's finding on the merits of this listing petition is expected later this year, typically 90-days or more after publication of receipt of the petition.

The Klamath Mountains Province (KMP) ESU of steelhead, which includes stocks from the Trinity River, was proposed for listing as threatened on March 16, 1995; however, on February 7, 1998, NMFS determined that the population did not warrant threatened status, but that it did warrant candidate status (as defined by NMFS). Subsequent information on the KMP ESU steelhead was evaluated and NMFS made a final listing determination that the ESU did not warrant listing in April 2001 (CFR Vol. 66, No. 65, April 4, 2001)

TABLE 3.6-5
SPECIAL STATUS FISH SPECIES CONSIDERED FOR ANALYSIS, TRINITY RIVER BRIDGES PROJECT

Common Name (Scientific Name)	Status FED/ST	General Habitat	Comments
Green sturgeon (*Acipenser medirostris*)	C/SC	Known to spawn in Sacramento, Feather, and Klamath rivers, and juveniles may occur in estuaries. Occur in San Francisco, San Pablo, and Suisun bays and in the Delta. Prefers to spawn in large cobble; eggs fertilized in relatively high water.	The species may be found in the lower Trinity River, but is not known to inhabit the upper Trinity River. **Project study area is outside the known range for the species.**
Pacific lamprey (*Lampetra tridentata*)	SC/--	Spawn in freshwater rivers and streams with juveniles found in slow-moving current, silty bottom habitats; metamorphosed juveniles migrate through estuaries to the ocean.	Observed to spawn in Browns Creek (Deibel 1988), near the project sites; Ammoecetes abundant during spring throughout the reach where project sites are located. **The species may occur at all project locations.**
So. OR/No. CA ESU coho salmon (*Oncorhynchus kisutch*) Designated Critical Habitat	T/RT	Juveniles prefer deep (≥ 1 m) pools with dense overhead cover, and clear water. Found over a range of substrates from silt to bedrock (Moyle et al., 1995). Trinity River is designated critical habitat and essential fish habitat.	Suitable spawning, rearing, and/or migration corridor habitat exists at or near all project sites. **All four bridge sites are within designated critical habitat. The species is known to occur at all project locations.**
Klamath Mts. Province ESU steelhead (*Oncorhynchus mykiss irideus*) (summer-, fall-, and winter-run races)	NW/SC	Freshwater rivers and streams. (Trinity and Klamath Rivers and their tributaries). Steelhead require cool, swift shallow water; clean, loose gravel for spawning; and suitable large pools in which to spend the summers (CNDDB, 2002).	Summer-run race is a state species of special concern. 'Half-pounder' life history exhibited by fall-run race. Suitable spawning, rearing, and/or migration corridor habitat exists at or near all project sites. **The species is known to occur at all project locations.**
Upper Klamath-Trinity Rivers ESU chinook salmon (*Oncorhynchus tshawytscha*) (spring- and fall-run races)	NW/SC	Freshwater rivers and streams. (Trinity and Klamath Rivers and their tributaries). Chinook salmon require cool streams with deep pools and riffles, and gravel or cobble substrate. Trinity River is designated essential fish habitat for the species.	Spring-run race is a state species of special concern. Suitable over-summering, spawning, rearing, and migration corridor habitat exists at or near all project sites. **The species is known to occur at all project locations.**

Notes:
Federal (FED) & State (ST) Status Codes:
E = Endangered; T = Threatened; C - Candidate Species; Recommended Threatened=RT; NW = Not Warranted for Listing; SC = Species of Concern

However, the summer-run population segment of this ESU remains a California state species of concern, as well as a USFS sensitive species (Moyle et al. 1995; USFS 1995).

Similarly, in a 1998 status review of all west coast chinook salmon stocks (Myers et al. 1998), the upper Klamath-Trinity rivers ESU chinook salmon was determined to not warrant listing as a threatened or endangered

species. However, spring-run chinook salmon within the Klamath-Trinity basin are a California species of special management concern (Moyle et al. 1995).

Species Accounts

Provided below are species accounts for each of the fish species which is known to occur in the project area. This information was taken from the BA that was prepared for the project to address impacts to federally listed fish species (**Appendix F**).

Coho Salmon (SONCC ESU)

Habitat and Biology. Coho salmon are semelparous salmonids, and spend approximately the first half of their life cycle rearing in streams and small tributaries. The remainder of the life cycle is spent foraging in estuarine and marine waters of the Pacific Ocean prior to returning to their stream of origin to spawn and die. Most adults are three-year old fish, however, some precocious males known as "jacks" return as two-year old spawners (CFR Vol. 62, No. 87, May 6, 1997). A returning adult may measure more than two feet in length and weigh an average of eight pounds (OPR 2001). Adults typically begin their freshwater spawning migration in the late summer and fall, spawn by mid-winter, and then die. The run and spawning times vary between and within populations. Eggs incubate in redds from 1.5 to 4 months, depending on the water temperature, before emerging as alevins (i.e., larval life stage that depends upon yolk sacs as its food source). Alevins emerge from the redds after yolk sac absorption as fry (i.e., juvenile) and begin actively feeding within the water column. Juveniles typically rear in freshwater for up to 15 months, migrating to ocean in the spring as smolts. Coho salmon typically spend two growing seasons in the ocean before returning to their natal stream to spawn as three-year olds. The SONCC ESU includes all naturally spawned populations of coho salmon in coastal streams between Cape Blanco, Oregon and Punta Gorda, California.

Range. The SONCC ESU coho salmon ranges from approximately 90 miles south of Eureka, California to approximately 50 miles north of Gold Beach, Oregon, and extends up to 90 miles inland. They are found in the waters and tributaries of Elk River, Rogue River, Chetco River, Smith River, Klamath River, Scott River, Salmon River, Trinity River, Eel River, and Mattole River. Designated critical habitat for the species lies partially or wholly within watersheds from the following counties: California – Del Norte, Glenn, Humboldt, Lake, Mendocino, Siskiyou, and Trinity; Oregon – Coos, Curry, Douglas, Jackson, Josephine, and Klamath.

Recent weir counts and spawning escapement estimates (1977-2001) for SONCC ESU salmon to the upper Trinity River have ranged from 59,079 in 1987 to 852 in 1994, averaging 15,942 (CDFG 2002e). Although the majority of all returning adult coho salmon to the Trinity River are thought to be of hatchery origin, nearly two-thirds of these fish are estimated to spawn naturally. (NMFS 1997; CDFG 2002f). Coho salmon are known to spawn in the vicinity of all four project bridge sites, Salt Flat, Bucktail, Poker Bar, and Biggers Road (B. Aguilar, CDFG, personal communication, 8/29/2002). Rearing juvenile coho salmon are known to use habitat at or near all except the Biggers Road Bridge site (B. Aguilar, CDFG, personal communication, 8/29/2002). Side channel and pool habitats at, or adjacent to, the Salt Flat, Bucktail, and Poker Bar bridges sites provide suitable habitats used by rearing coho salmon.

CNDDB/Rarefind Records. _No occurrence records were identified for the species within the *Rush Creek Lakes, Trinity Dam, Papoose Creek, Junction City, Weaverville, Lewiston, French Gulch, Hoosimbim Mountain,* and *Bully Choop Mountain* quadrangles.

Chinook Salmon (Upper Klamath-Trinity Rivers ESU)

Habitat and Biology. Chinook salmon are the largest of the Pacific salmon and adults weighing over 100 pounds have been caught in North America. Aside from their larger size, chinook salmon can be distinguished from other salmonids by the presence of black spots on both the dorsal and ventral lobes of their caudal fin and by the presence of black pigmentation along the base of their teeth. When mature, adult chinook salmon migrate upstream in search of suitable spawning areas in rivers and streams of their birth.

The female digs a nest (redd) in habitats with moderate water velocity (1.0 to 2.5 feet per second) over suitable gravel and cobble substrates. The female deposits her eggs in the freshly dug redd. After the eggs are laid and fertilized by a male, the female continues digging upstream covering the eggs with gravel. A single female may deposit eggs in several egg pockets within one redd. Once spawning is complete the female may defend the redd site for several days until her energy resources are drained and she dies. Chinook salmon eggs typically incubate between 90 and 150 days inside the redd. The length of time for incubation is influenced greatly by water temperature.

After hatching the young fry (alevins) remain in the redd for several more days while they absorb energy from their yolk sac. Once the yolk sac is absorbed, young button up fry emerge from the redd and begin feeding on their own. Unable to sustain swimming speeds sufficient to hold to faster currents young chinook salmon distribute along the river margins and river bed in slow water velocity areas often associated with back waters, slack water areas adjacent to river bars, or near woody debris and other object cover items that provide shelter from swifter currents.

As they grow larger, juvenile chinook salmon move into deeper water habitats associated with slightly higher water velocities. They tend to congregate near shear velocity zones that typically occur in riffle pool transition areas, in large pools, or along river margins. Juvenile chinook salmon only rear in the river for a short time, approximately three to six months, before emigrating downstream to the estuary and ocean where they grow to adult size. Chinook salmon may spend between one to six years in the ocean environment before returning to their natal streams to complete the cycle.

Along the west coast, NMFS has described two distinct races of chinook salmon based in part on early life history characteristics. These two races are "stream type" and "ocean type." Stream-type chinook are found mostly in headwater streams, have a longer freshwater residency, and exhibit more extensive offshore migrations. Stream-type chinook salmon tend to return to their natal streams in spring or summer. Ocean-type chinook salmon are more common along coastal streams and typically migrate to sea within three months of emergence, however they may spend up to a year in freshwater prior to emigration. Ocean-type chinook salmon may return to their natal streams as spring, fall, late fall, or winter runs.

Range. The Upper Klamath-Trinity Rivers ESU includes all naturally spawned populations of chinook salmon in the Klamath and Trinity River Basins upstream of the confluence of the Klamath and Trinity Rivers. Major river basins containing spawning and rearing habitat for this ESU comprise approximately 6,429 square miles in California. The following counties lie partially or wholly within these basins: Del Norte, Humboldt, Siskiyou, and Trinity. These populations include both spring- and fall-run fish that enter the Upper Trinity River Basin from March through July and July through October and spawn from late August through September and September through early January, respectively.

Recent weir counts and spawning escapement estimates (1977-2001) for the spring run of Upper Klamath-Trinity Rivers ESU chinook salmon to the Trinity River has ranged from 62,692 in 1988 to 2,381 in 1991, averaging 16,691 fish (CDFG 2002e). The fall run of Upper Klamath-Trinity Rivers ESU chinook salmon to the Trinity River has ranged from 147,888 in 1986 to 9,207 in 1991, averaging 43,464 fish (CDFG 2002e). On average, nearly two-thirds of these fish are estimated to spawn naturally (CDFG 2002e). Although, in recent years, nearly half of all returning adult chinook salmon of both runs are spawned at the hatchery (CDFG 2002e). Although complete data were not available at the time of this writing, a massive fish kill (est. 33,000 fish of which 95-96 percent were chinook salmon) in the lower Klamath River during September 2002 was reported to have disproportionately impacted Trinity River fall-run chinook salmon compared to other runs in the Klamath-Trinity Basin (CDFG 2003). Chinook salmon are known to spawn in the vicinity of all four project bridge sites, Salt Flat, Bucktail, Poker Bar, and Biggers Road (B. Aguilar, CDFG, personal communication, 8/29/2002, USFWS, Arcata, CA, unpublished data). Side channel and main channel habitats at, or adjacent to, each of the project bridge sites provide suitable habitats used by spawning, rearing, and emigrating chinook salmon.

CNDDB/Rarefind Records. Spawning habitat for chinook salmon occurs from Lewiston Dam downstream to the confluence with the North Fork Trinity River (*Junction City, Lewiston* and *Weaverville* quadrangles).

Steelhead (KMP ESU)

Habitat and Biology. Steelhead trout are closely related to other rainbow trout sub-species. Steelhead have a stronger tendency to migrate than do other sub-species of rainbow trout, and while most individuals migrate to the sea during their life cycle, there are individuals that never exhibit anadromous tendencies and reproduce successfully without going to sea. However, most migrate to sea and spend one or two (occasionally more) seasons at sea before returning to freshwater to spawn. Steelhead trout are not semelparous, and many individuals spawn two or three times.

The species can be divided into two separate reproductive life history strategies (or runs) according to the level of sexual maturity upon river entry and the duration of the spawning migration. The two life history strategies are referred to as "stream maturing" and "ocean maturing." Stream maturing steelhead enter freshwater in a sexually immature state and require several months to mature and spawn. Ocean maturing steelhead enter freshwater sexually mature and spawn shortly after entering the river. These two life history types are also referred to by their season of freshwater entry: stream maturing = "summer/fall-run" and ocean maturing = "winter-run."

Range. The KMP ESU includes steelhead from the Elk River in Oregon to the Klamath and Trinity Rivers in California. Major river basins containing spawning and rearing habitat for this ESU comprise approximately 13,011 square miles in California and Oregon. The following counties lie partially or wholly within these basins: California-Del Norte, Humboldt, Siskiyou, and Trinity; Oregon - Coos, Curry, Douglas, Jackson, Josephine, and Klamath.

The KMP ESU steelhead in the Trinity River consists of summer, fall/winter runs (CFR Vol. 66, No. 29, February 12, 2001). The fall/winter run is thought to be the dominant run to inhabit the project reach of the Trinity River (Busby et al. 1994). The CDFG designates the fall run of steelhead in the Trinity River as a distinct run, thus recognizing three distinct runs (fall, winter, and summer runs [Leidy and Leidy 1984]). Most data on adult numbers represent the summer and the fall portion of fall/winter-run steelhead, since the winter migrating steelhead are

difficult to observe and count (NMFS 2001; CDFG 2002e). However, the fall/winter run is considered the dominant life-history type in the Trinity River. Intermittent weir counts and spawning escapement estimates from 1980 to 2001 for the fall run of the KMP ESU steelhead to the Trinity River has ranged from 37,276 in 1989 to 3,046 in 1992, averaging 9,753 fish (CDFG 2002e). The majority of steelhead in the Trinity River are thought to spawn naturally (NMFS 2001; CDFG 2002e). Steelhead are known to spawn in tributaries and in the mainstem Trinity River in the vicinity of all four project bridge sites, Salt Flat, Bucktail, Poker Bar, and Biggers Road (B. Aguilar, CDFG, personal communication, 8/29/2002). Side channel and main channel habitats at, or adjacent to, each of the project bridge sites provide suitable habitats used by rearing steelhead.

CNDDB/Rarefind Records. No occurrence records were identified for the *Rush Creek Lakes, Trinity Dam, Papoose Creek, Junction City, Weaverville, Lewiston, French Gulch, Hoosimbim Mountain,* and *Bully Choop Mountain* quadrangles.

Pacific Lamprey

Pacific lamprey (*Lampetra tridentata*) is the most common lamprey species in California. The species is currently designated as a federal species of concern. Lampreys are eel-like in appearance and adults are predaceous/parasitic feeding on larger fish species including salmonids. Pacific lamprey spawn in similar habitats used by salmon and steelhead, but use smaller gravel substrates. Adult lampreys excavate a nest in gravel substrates using their tails and sucker like mouths. In general, adult Pacific lamprey migrate upstream during the spring and summer to spawn or hold over until the following year to spawn. In the Trinity River, adult lamprey have been observed to migrate upriver through the summer into early fall. During the spawning ritual, a female lamprey deposits her eggs in the excavated pits as a male, intertwined around her, fertilizes them. The pits are excavated in gravel and small cobble substrates, typically in run and riffle habitats. The adults die following spawning. Following incubation larval lamprey, referred to as ammocoetes, distribute along slow water and backwater areas, often burrowing into the silty sand or mud bottoms, where abundant organic material provides a source of food. The length of the ammocoete stage is uncertain, but appears to last from five to seven years in freshwater. When mature, they begin their migration to the sea and develop a sucker like mouth with numerous rasping teeth that are used to bore in the sides of host fish. Adult lamprey will remain in the ocean from six to 18 months before they begin migrating upstream to spawn.

Little information exists on lamprey population abundance and distribution patterns in the Trinity River. Pacific lampreys have been observed to spawn in Browns Creek, a tributary of the Trinity River (Deibel 1988). Ammoecetes are abundant in the spring within the reach where the bridge replacement projects are located (J. Glase, USFWS, personal communication, 8/29/2002).

Green Sturgeon

The green sturgeon (*Acipenser medirostris*), a federal candidate species and a state species of special concern, is known to occur in the lower Klamath and Trinity Rivers. While few observations are available regarding the reproduction of green sturgeon in the Klamath-Trinity Basins, they are thought, like other sturgeon species, to spawn from March through July in areas of fast water over coarse gravel bottoms. Eggs settle into spaces between gravel and adhere to the substrate. Eggs hatch within a few days and fry are dispersed downstream. Habitat requirements for green sturgeon are generally unknown. Juvenile green sturgeon appear to outmigrate during the first summer to the lower river or estuary where they will rear before ultimately entering the ocean. The species migrates up the

Klamath and Trinity Rivers to spawn between late February and July. The upstream migration limit for the species within the Trinity River is believed to be Gray's Falls at RM 43 (USFWS and Hoopa Valley Tribe, 1999). Based on the best available information, this species is not expected to occur in the project study area.

Local Setting

Aquatic Habitat Conditions

The aquatic environment at each of the bridge project sites is composed of a variety of riverine habitat types (i.e., runs, riffles, pools). Each of these habitat types consists of distinctive combinations of depth, relative water velocity, water temperature, cover, substrate composition (i.e., bedrock, cobble, gravel, sand, silt, etc), and adjacent riparian vegetation. Riparian wetland vegetation directly adjacent to the river is referred to as shaded riverine aquatic (SRA) habitat and is included as a component of designated critical habitat for coho salmon, as well as a component of EFH for both coho and chinook salmon. EFH refers to those waters and substrates necessary for the spawning, breeding, feeding, or growth to maturity. As defined, the term 'waters' includes aquatic areas (and their associated physical, chemical, and biological properties) that are used by fish or, where appropriate, have historically been used by fish. The term 'substrate' includes sediment, hard bottom, structures underlying the waters, and associated biological communities. 'Necessary' means the habitat required for a sustainable fishery and the managed species' contribution to a healthy ecosystem. Finally, "spawning, breeding, feeding, or growth to maturity" refers to a species' full life cycle. 'Adverse effect' means any impact that reduces the quality and/or quantity of EFH, and may include direct, indirect, site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Freshwater EFH for chinook salmon consists of four major components: spawning and incubation; juvenile rearing; juvenile migration corridors; and adult migration corridors and adult holding habitat (PFMC 2000). Important components of EFH for spawning, rearing, and migration include adequate substrate composition; water quality (e.g., dissolved oxygen, nutrients, temperature, etc.); water quantity, depth, and velocity; channel gradient and stability; food; cover and habitat complexity (e.g., large woody debris, pools, channel complexity, aquatic vegetation, etc.); space; access and passage; and flood plain and habitat connectivity (PFMC 2000). Following are descriptions of the aquatic habitat conditions at each of the bridge project sites.

Salt Flat

The river at this project site consists of a main channel carrying the majority of the flow and an engineered side channel running through alluvial deposits along the left bank. The main channel includes a long riffle-run series upstream of the existing bridge and a large boulder/bedrock and wood-enhanced pool followed by a long, deep run downstream of the bridge (**Figure 3.6-4**). The side channel features relatively short and shallow riffle-pool-run series' throughout the ESL. A sediment bar island varying in width from approximately 50 to 150 feet is formed between the two channels. The right channel riffle in this ESL is dominated by boulder and cobble substrates, while the pools are bedded primarily by cobbles and gravel. An engineered feathered edge, consisting of spawning-sized gravels and occupying about 33 percent of the channel width, exists along the left bank between about 215 and 295 feet downstream of the existing bridge. The average depths of the run and pool in the immediate vicinity of the bridge range from about two to three feet at summer base flow. Both banks exhibit mid to late seral riparian vegetation creating SRA habitat covering about 85 percent of the riverbanks within the ESL.

Within the side-channel, gravel and cobble dominate the riffles and runs, and cobbles, gravels and sand bed the pools. Depths averaged from one to three feet in the side-channel near the bridge. SRA habitat and early to mid-seral riparian vegetation covered 70 percent of the banks along the side channel.

Spring-run chinook salmon were observed spawning in riffles of the main channel and the side channel within or near the ESL for this site. Run and pool habitats appear to be suitable for juvenile salmonid rearing, in both the main and side channels. Suitable fry habitat is limited to stream edges and the feathered edge run in the main channel, but is suitable in the riffles, pools and shallow runs of the side channel. The deep run and pool downstream of the existing bridge appear suitable for over-summer holding of spring chinook salmon.

Bucktail

The project site spans an overflow bypass channel along the right riverbank that is formed by a levee separating the main river channel from the adjacent flood plain. Flow into the bypass channel is controlled at its upstream end by an earthen weir notched into the levee. The earthen weir is located about 290 feet upstream of the road crossing and is designed to divert a portion of the river when flows exceed 8,000 cfs. High flows passing through the bypass channel return to the main river at a large pool approximately 420 feet downstream of the county road bridge. At flows below 8,000 cfs, the bypass channel does not carry flowing water, although a backwater forms in the bypass channel with rising river stage from about 1,000 to 8,000 cfs (E. Solbos, BOR, personal communication).

There is a low-lying wetland area located in the bypass channel just downstream from the road crossing. It appears that water flows into the wetland only during periods of high flow, but is sustained through the summer by ground water. The remainder of the bypass channel upstream of the road crossing is dry during summer base flows conditions.

The main river channel adjacent to the project site within the ESL is characterized by a typical riffle-pool-run sequence with a prominent pool, locally known as "Bucktail Hole," immediately downstream of the bypass channel. The river adjacent to this site consists of a main channel and a small, shallow, engineered side channel immediately upstream of the bypass channel's earthen weir and levee structure. Riffle-run habitat sequences typify the main river channel and side channel upstream of, and alongside, the leveed bypass channel. Relatively deep pool habitats with short riffle sections separating them exist immediately beneath and downstream of the county road bridge (**Figure 3.6-5**). Cobbles and gravels dominate the river habitats throughout this ESL. The bypass channel is primarily a sand bed. The pools in this ESL are relatively deep ranging from seven feet at the bridge to over 12 feet in the "Bucktail Pool" downstream of the bridge and at the terminus of the bypass channel. The riffles and runs in this ESL are one to three feet deep on average. SRA habitat is limited in this ESL primarily to about 50 percent of the left bank both upstream and downstream of the existing bridge. The large "Bucktail Hole" at the terminus of the bypass channel is largely vegetated on both banks providing SRA habitat values.

The large deep "Bucktail Hole" within this ESL appears to be suitable staging (holding) habitat for summer/fall-run steelhead and spring-run chinook salmon. The pools, riffles, and runs provide suitable rearing habitat for juvenile salmonids throughout this ESL. Salmon fry have been observed in the edgewater habitat along the right bank of the run upstream of the existing bridge (Gallagher 1999).

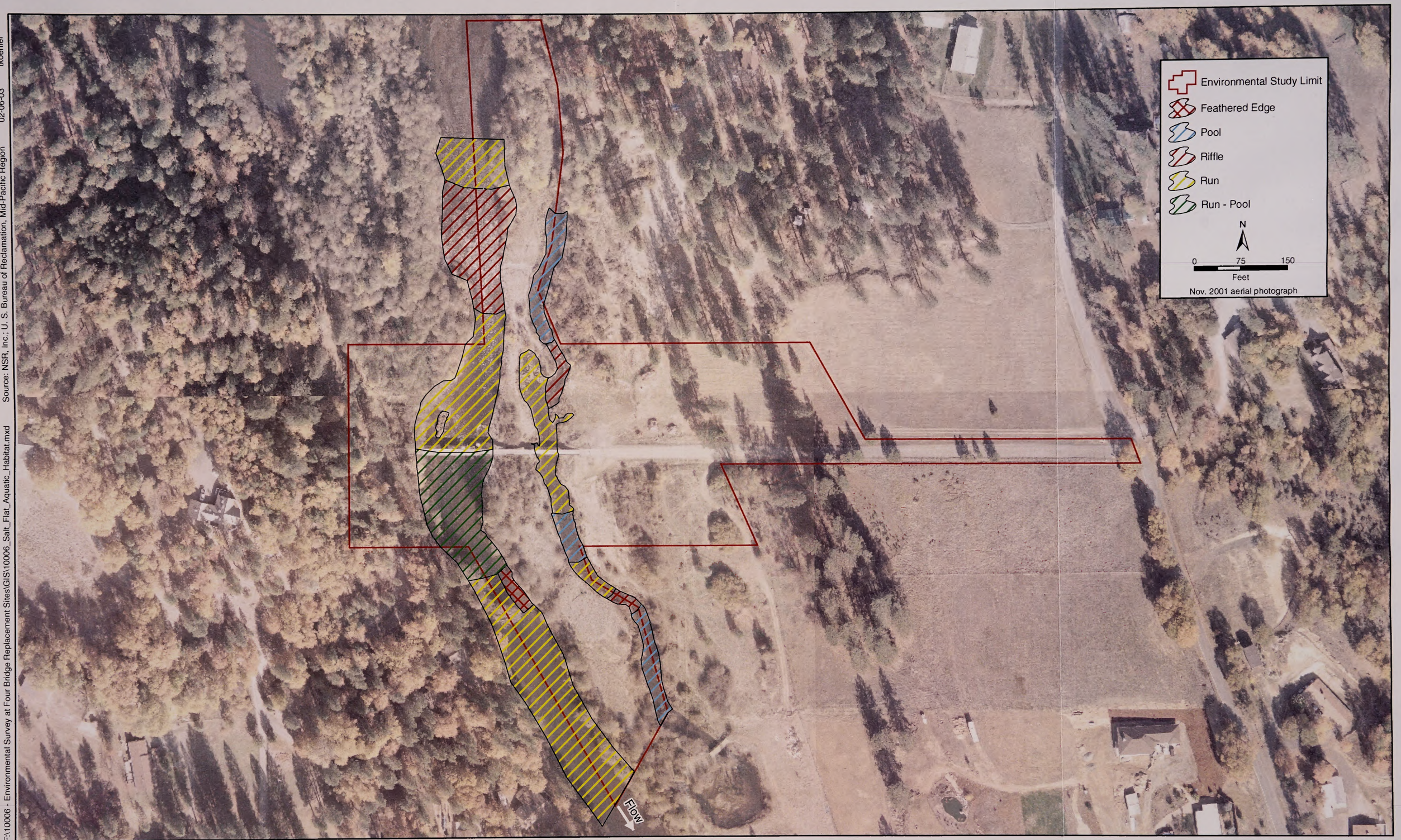


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Figure 3.6-4
Salt Flat Riverine Habitat

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Trinity River Bridges Project

Figure 3.6-5
Bucktail Riverine Habitat

Poker Bar

The river at this site is bifurcated with the original river channel forming the left channel running against a bedrock hillside and an engineered side-channel channel running through an alluvial bed forming the right channel. The left channel carries about two-thirds of the river flow, while the right side-channel carries about one-third of the river's flow. The sediment bar island formed between the channels is approximately 200 feet wide at the existing bridges. Both channels exhibit typical riffle-pool-run sequences with large scour pools directly beneath the existing bridges (**Figure 3.6-6**). The left channel riffles are dominated by gravel and cobbles. The runs and pools are bedded with cobbles and large boulders throughout the left channel. The engineered right channel is composed mostly of a gravel-cobble-small boulder bed, with gravel dominating in the riffles and cobbles and boulders in the flatwater sections. The pools formed beneath both the right- and left channel bridges are relatively deep, averaging about four feet in the right channel and 6.5 feet in the left channel. In general, habitats are deeper in the left channel throughout this ESL. Both channels exhibit extensive mid- to late seral riparian vegetation contributing SRA habitat along both banks, averaging about 70 percent of the total bank length throughout the ESL.

Spring-run chinook salmon were observed spawning in the riffles and run tailouts near the upstream end of both channels of this ESL, indicating suitable spawning gravels. The large, deep pool and run near the existing left channel bridge appears suitable as over-summering habitat for adult spring chinook salmon. Juvenile rearing habitat appears suitable in the runs and pools throughout this ESL. Fry habitats are limited to the edgewater of the run upstream of the left channel bridge and in the shallow runs, riffles, and associated edgewater in the engineered right side-channel.

Biggers Road

A single, broad river channel exhibiting an alternating series of long riffles and deep run habitats occurs at this site. The river is relatively wide averaging about 110 feet in width along the ESL. A long, deep run, ranging in depth from three to five feet, is formed immediately beneath the existing bridge and extends from about 100 feet upstream to 200 feet downstream of the bridge (**Figure 3.6-7**). Gravel and cobbles dominate the riffles and cobbles and boulders bed the runs throughout this ESL. The left bank provides a continuous, narrow strand of mid- and late-seral riparian vegetation contributing to SRA habitat against that bank. The right bank is developed with residential lawn dominating the bank in the vicinity of the existing bridge. Natural riparian vegetation resumes about 200 feet downstream of the existing bridge and provides high value SRA habitat.

The gravels in the tailout of the run and the long riffle below the existing bridge support regularly observed spring and fall-run chinook spawning (USFWS, unpublished data, and landowner, personal communication). Runs and edgewater associated with the riffles appear to be suitable for juvenile and fry rearing in this ESL.

Native Anadromous Fish Species (Common to All Four Locations)

All three species of native anadromous salmonids (i.e., spring- and fall-run chinook salmon, coho salmon, and summer/fall- and winter-run steelhead) may be expected to occur within the bridge project ESLs. All freshwater life stages of these species (i.e., adult, egg, fry, and juvenile/smolt) may be expected to utilize habitats within the vicinity of all the bridge project ESLs. The anadromous Pacific lamprey may also be expected to occur in each of its freshwater life stages (i.e., adult, egg, larval ammocoete, metamorphosed and emigrating juvenile) at all of the sites.

Adult spring-run chinook migrate past all the proposed sites, and are likely to over-summer in deep pool and run habitats, especially at the Salt Flat, Bucktail, and Poker Bar bridge sites from late April through September. These fish commence spawning about the second week of September and spawn through mid-October. Spawning was observed during September and October on riffles and run tailouts at Salt Flat, Poker Bar, and Biggers Road sites. Spawning is also reported to occur in the riffle and pool tailout within the Bucktail ESL (B. Aguilar, CDFG, personal communication). Fry and juvenile spring-run would be expected in suitable habitats at all the proposed sites from late-December through October. Outmigration of spring run smolts would occur from late October through June.

Adult fall-run chinook migrate to and are expected to spawn within or near all bridge project sites in all suitable habitats typically from late-September through mid-December (C. Chamberlain, USFWS, personal communication). Fry and juveniles are expected in suitable rearing habitats from January through June (J. Glase, USFWS, personal communication). Sub-yearling fall chinook smolts generally outmigrate from April through June.

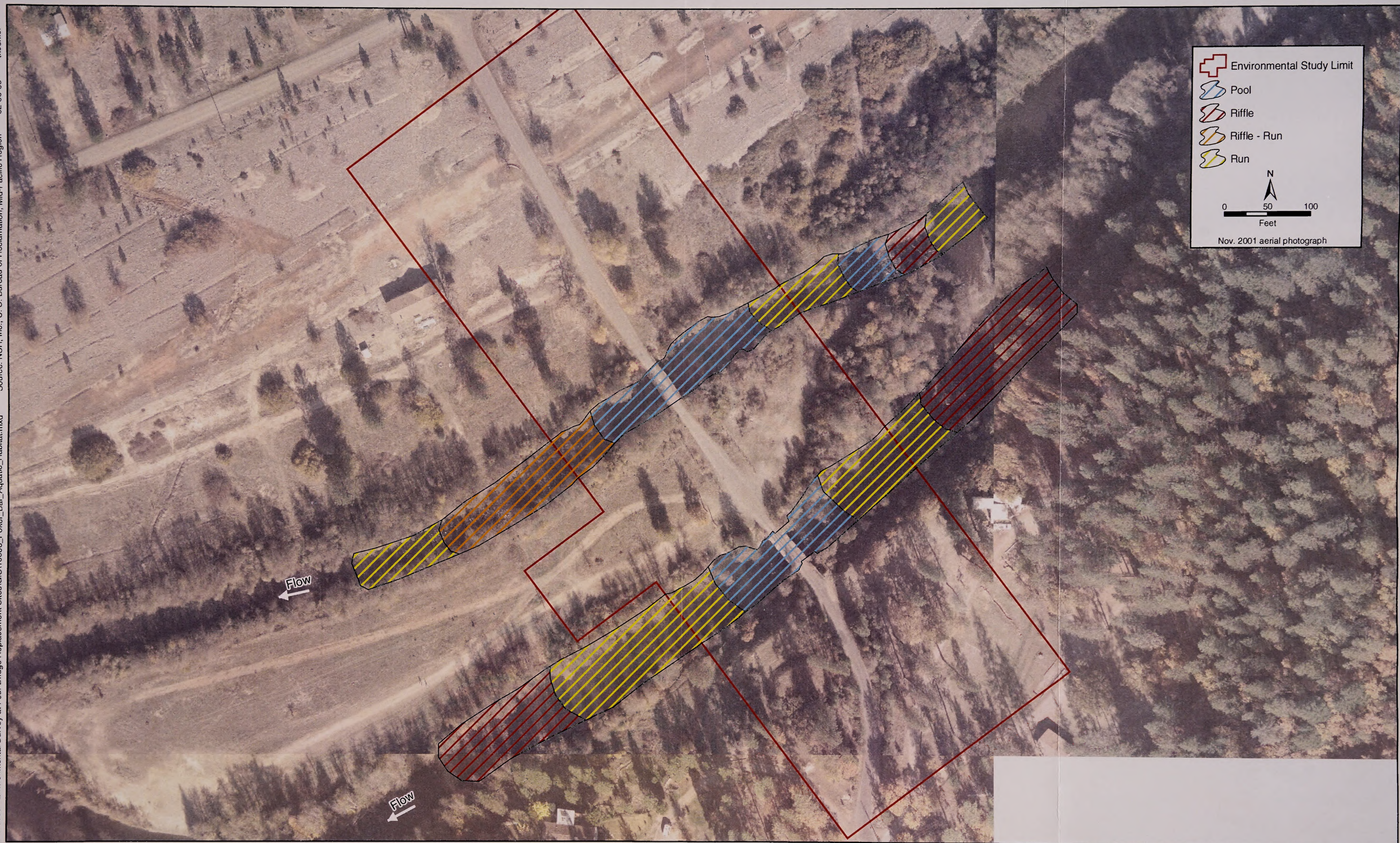
Adult coho migrate to and may spawn within or near each of the bridge project sites typically from late-October through December (J. Glase, USFWS, personal communication). Although Juvenile coho habitat is considered to be limited at the Biggers Road bridge site, fry and juveniles are expected in suitable habitats year-round at all other sites (B. Aguilar, CDFG, personal communication, J. Glase, USFWS, personal communication). Yearling coho smolts typically outmigrate during storm spates from October through June; however, smolts have been observed migrating downstream as late as August.

Adult summer/fall-run steelhead migrate to and are expected to over-summer in the deeper pools and runs at all the bridge project sites from April through September. These fish will typically actively feed through the salmon spawning season, and migrate to the upper river reaches and into tributaries to spawn from February through April. Winter steelhead typically migrate to spawning sites from November through April and spawn during the same time as the summer/fall run. Steelhead spawning has been observed at all four project sites (B. Aguilar, CDFG, personal communication). Fry and juvenile steelhead of both runs may be expected in suitable rearing habitats year-round at all sites, but particularly in the engineered side channels at Salt Flat and Poker Bar (B. Aguilar, CDFG, personal communication; J. Glase, USFWS, personal communication). Sub-yearling, yearling, and two-year old smolts generally outmigrate similar to coho salmon during storm spates from October through June.

Adult Pacific lampreys migrate to spawn in the upper Trinity River and tributaries during the spring and early summer, although they are documented to occur in the river near Lewiston through August (Moffett and Smith 1950; Moyle 2002). Suitable lamprey spawning habitat occurs in the riffles and run tailouts at all sites. Based on juvenile outmigrant trapping data, larval lampreys and juveniles are expected in the upper Trinity River to be abundant in slow, mud- and sand-bottomed backwaters and pools, where they burrow and filter feed on detritus and algae year-round (J. Glase, USFWS personal communication). Based on this habitat preference, lamprey ammocoetes may be expected in the mud and sand sediments of the pool and run edgewater habitats at all of the project sites. The Salt Flat side channel, Bucktail, and Poker Bar side channel, in particular, exhibit such habitat near the vicinity of the existing bridges within these ESLs.

Resident Native and Non-Native Fish Species (Common to All Four Locations)

Two resident fish species have been reported to occur at all four project sites, rainbow trout and smallscale suckers (J. Glase, USFWS personal communication). Both species occur as adults and juveniles at these sites. They may be



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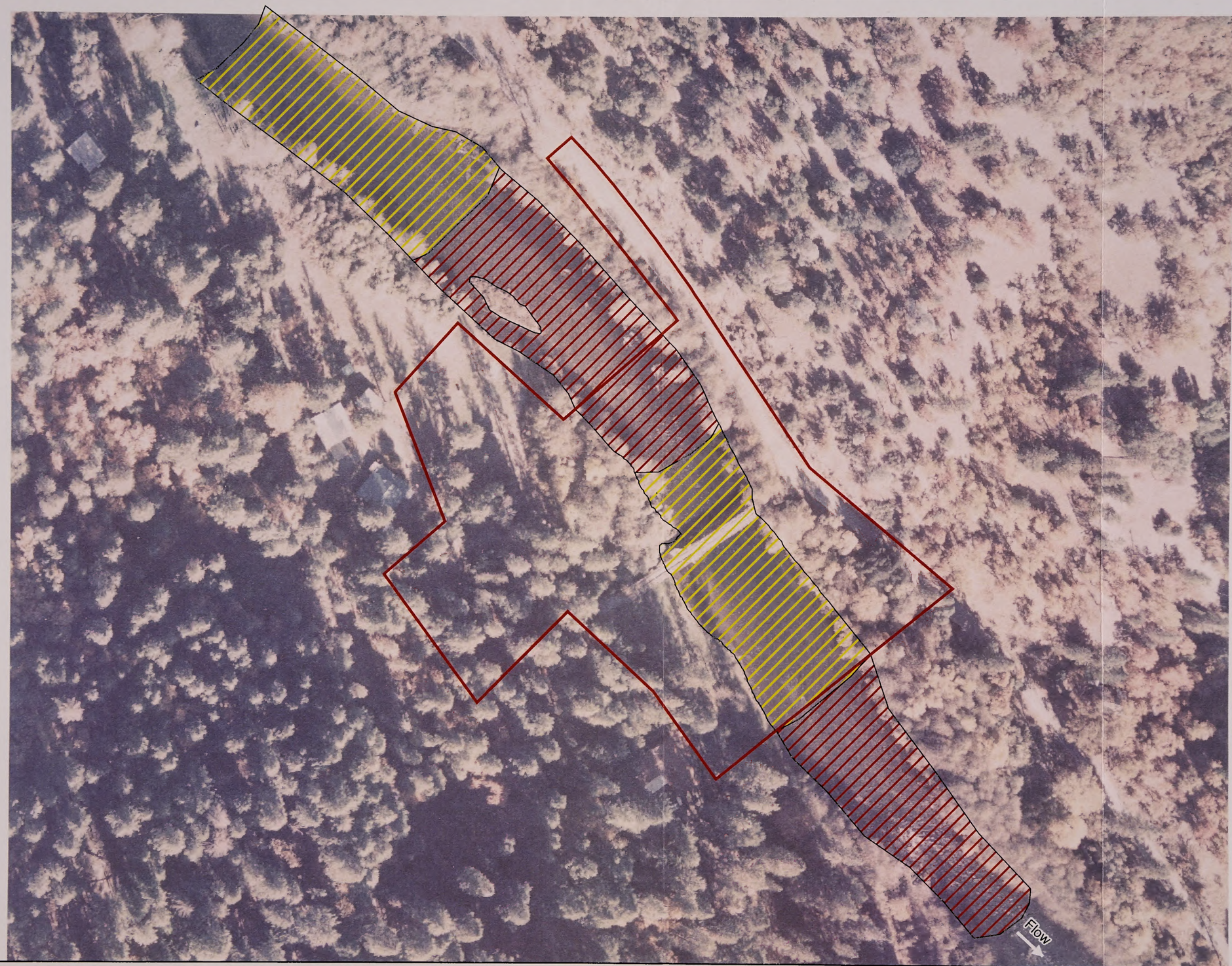
Trinity River Bridges Project

Figure 3.6-6
Poker Bar Riverine Habitat



Environmental Study Limit
Riffle
Run
N
0 50 100
Feet
Nov. 2001 aerial photograph

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Trinity River Bridges Project

Figure 3.6-7
Biggers Road Riverine Habitat

found in the pools, runs, and riffles during the spring and summer months, but retreat to the pools and slow edgewater areas during the winter months and higher flows. Smallscale suckers are particularly abundant in the Poker Bar side channel and the deep pool near the main river bridge (J. Glase, USFWS, personal communication). It is not known if these species spawn within the project ESLs; however, suitable spawning habitat for these species (similar to that used by steelhead) exists at all sites.

Adult and juvenile brown trout are reported to inhabit most of the habitat types in the Salt Flat ESL, and are expected to be year-round residents, especially in the long, deep run and pool downstream of the bridge (J.Glase, USFWS, personal communication). Brown trout spawning may occur during the fall within this ESL, typically during November, in the riffles and run tailouts. Brown trout are not reported from any of the other project ESLs, although suitable habitat for adult and juveniles exists in the pools and runs at the Bucktail, Poker Bar, and Biggers Road sites.

3.6.2 Regulatory Setting

This section lists specific environmental review and consultation requirements and identifies permits and approvals that must be obtained from local, state, and federal agencies before construction of the proposed Project.

Federal

National Marine Fisheries Service

Federal Endangered Species Act

The ESA defines "take" (Section 9) and generally prohibits the "taking" of a listed endangered or threatened species (16 USC. 1532, 50 CFR 17.3). Under the ESA, the "take" of a federally listed threatened or endangered species is defined as actions: *"to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."* The term "harm" includes intentional or negligent acts or omissions that actually kill or injure wildlife. Such acts may include significant habitat modification or degradation when it actually kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding or sheltering. Section 7 of the ESA requires federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat for these species. The BOR and the BLM, as the federal lead agencies for this Project, are required to consult with NMFS concerning project effects to SONCC ESU of coho salmon pursuant to Section 7 of the ESA.

Magnuson-Stevens Fishery Conservation and Management Act (MSA)

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a federal fisheries management plan.

The MSA requires federal agencies to consult with NFMS on all actions, or Proposed Actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (MSA §305[b][2]). A component of this consultation process is the preparation and submittal of an EFHA. The length of the EFHA will vary based on project complexity and magnitude of potential impacts to EFH, but all EFHAs must include the following information: 1) a description of the Proposed Action; 2) an analysis of the effects, including cumulative effects, of the Proposed Action on EFH, the managed species, and associated species, such as major prey species, including affected life history stages; 3) the

federal agency's views regarding the effects of the Proposed Action on EFH; and 4) proposed mitigation, if applicable. In instances where MSA and ESA issues overlap, NMFS encourages an integrated approach for consultation.

The EFH mandate applies to all species managed under a federal fishery management plan (FMP). For the Pacific Coast (excluding Alaska), there are three FMPs covering groundfish, coastal pelagic species, and Pacific salmon. For the proposed Project, the BOR, as the federal lead agency, will need to consider the impact of the Proposed Action on EFH for coho and chinook salmon in the Trinity River pursuant to the Pacific Coast Salmon FMP.

State

California Department of Fish and Game

Streambed Alteration (Sections 1600-1607 of the California Fish & Game Code)

State and local agencies, though not federal agencies such as the BOR, may be subject to Section 1601 of the California Fish and Game Code which governs construction activities that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the CDFG. Under Section 1601, a discretionary Stream Alteration Agreement permit from the CDFG (Region 1 for the proposed Project) must be issued by the CDFG to Trinity County prior to the initiation of construction activities within lands under jurisdiction. As a general rule, this requirement applies to any work undertaken within the 100-year floodplain of a stream or river containing fish or wildlife resources.

California Endangered Species Act

Under the CESA, the CDFG has the responsibility for maintaining a list of endangered and threatened species (California Fish and Game Code 2070). The CDFG maintains a list of "candidate species" which are species that the CDFG formally notices as being under review for addition to the list of endangered or threatened species. The CDFG also maintains lists of "species of special concern" which serve as species "watch lists." Pursuant to the requirements of the CESA, any local or state agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project study area and determine whether the proposed project will have a potentially significant impact on such species. In addition, the CDFG encourages informal consultation on any proposed project that may impact a candidate species.

Project-related impacts to species on the CESA endangered or threatened list would be considered significant. State-listed species are fully protected under the mandates of CESA. "Take" of protected species incidental to otherwise lawful management activities may be authorized under Section 2081 of the Fish and Game Code of California. Authorization from CDFG would be in the form of an Incidental Take Permit. For the proposed Project, Trinity County, though not BOR, would need to obtain an incidental take permit if the project could result in the take of a state-listed species (i.e., coho salmon).

"Fully Protected" Fish Species

California law (Fish and Game Code, § 5515) also identifies certain "fully protected fish" that cannot lawfully be "taken" even with an incidental take permit. The following species are protected in this fashion: (a) Colorado River squawfish (*Ptychocheilus lucius*); (b) thicktail chub (*Gila crassicauda*); (c) Mohave chub (*Gila mohavensis*); (d) Lost River sucker (*Catostomus luxatus*); (e) Modoc sucker (*Catostomus microps*); (f) shortnose sucker (*Chasmistes*

brevirostris); (g) humpback sucker (*Xyrauchen texanus*); (h) Owens River pupfish (*Cyprinoden radiosus*); (i) unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*); and (j) rough sculpin (*Cottus asperrimus*). None of these species is present in the Trinity River or its tributaries.

Local

Trinity County General Plan Goals and Objectives

The Trinity County General Plan contains goals and policies designed to guide the future physical development of the county, based on current conditions. The General Plan contains all the state-required elements, including community development and design, transportation, natural resources, health and safety, noise, housing, recreation, economic development, public facilities and services, and air quality. The following goals and policies, relative to fishery resource issues associated with the project study area, were taken from the applicable elements of the General Plan (County 2001). This includes the Lewiston Community Plan (County 1986) and the Douglas City Plan (County 1987).

County Wide Goals and Objectives

Environmental

To strive to conserve those resources of the County that are important to its character and economic well-being

- by assuring that developments occurring on these lands are compatible with the resources;
- by strongly supporting the County as "lead agency" or as an integral participant in any state or federal project within the County so that all agencies are made aware of local desires and all plans are coordinated;
- by utilizing a sound resource-related planning process in decision-making; and
- by protecting not only rare and endangered species, but also required habitat for more plentiful species.

Lewiston Community Plan Goals and Objectives

This plan includes the area centered on the Trinity River from Lewiston Lake to slightly downstream of the confluence of Grass Valley Creek and the Trinity River. Project sites within the planning area include Salt Flat and Bucktail.

Natural Resources

Goal: To protect areas of special habitat considerations within the Plan area.

- Encourage retention of riparian habitat areas.
- Work with property owners adjacent to the Trinity River to retain existing riparian vegetation.

Goal: To protect and improve fish habitat within the Plan area.

- Encourage the development of stream restoration projects within the Plan area.

Goal: To encourage the sound use of mineral resources, especially sand and gravel operations, which reduce sedimentation of the river.

Douglas City Community Plan

This plan includes the area centered on the Trinity River from Grass Valley Creek to slightly downstream of Steiner Flat. Project sites within the planning area include Poker Bar and Biggers Road bridge sites.

Natural Resources

Goal: To protect and improve fish habitat within the Plan area.

- Encourage the development of restoration projects within the Plan area.

Goal: Encourage the continued use of suitable lands for resource production purposes.

- Encourage the sound use of mineral resources, especially sand and gravel operations that also reduce the sedimentation in the Trinity River.

Project Consistency with the Trinity County General Plan

As described in Chapter 1, Project Description, the proposed Project would:

- Provide safe and reasonable year-round access to parcels of land served by the Salt Flat, Bucktail, Poker Bar and Biggers Road bridges across the Trinity River.
- Allow dam operators maximum flexibility to provide instream flow releases from Lewiston Dam adequate to meet the fishery and geomorphic flow needs for the mainstem Trinity River and to fulfill the Trinity River TMDL for sediment and restore the coldwater fishery beneficial use.

The following project objectives apply to the project's lead/responsible agencies for CEQA purposes:

- Minimize the threat to public safety and potential damage to property posed by the existing high likelihood of flooding
- Provide maximum flexibility for implementing a variety of potential Trinity River fishery flow alternatives, as well as other flow alternatives outside the ROD such as increasing dam releases during periods of high downstream tributary inflows
- Allow for high-efficiency sediment transport in the Trinity River to maximize the amount of sediment transported on a per acre-foot basis so that Trinity River can be removed from California's Clean Water Act Section 303(d) Impaired Waterbodies List, while minimizing the total amount of water necessary to transport sediment through the river system
- Provide maximum flexibility for operations of the TRD during periods of high runoff and flooding which could result in increased water in storage available for multiple beneficial uses (i.e., fisheries, recreation, water supply, water quality and power production)
- Provide alternative access on a short-term basis during project implementation
- Recovery of fish and wildlife resources that are listed as threatened and endangered

The following objectives apply to the projects responsible and trustee agencies, including the HVT, NCRWQCB, the SLC, the CDFG, and the SWRCB:

- Comply with the Water Code to ensure the highest reasonable quality of waters of the state and allocate those waters to achieve the optimum balance of beneficial uses
- Protect the public trust assets of the Trinity River watershed
- Protect, conserve, restore, and manage fish, wildlife, and native plant resources
- Comply with the Water Quality Control Plan for the Hoopa Valley Indian Reservation to preserve and enhance water quality on the Reservation, and to protect the beneficial uses of water.

3.6.3 Environmental Consequences/Impacts and Mitigation Measures

Methodology

The following section provides a brief overview of the analytic methodologies used for assessing potential impacts of the proposed Project on fisheries resources. These methodologies included a comprehensive literature search and focused field surveys.

Evaluation of the possible presence of special status fish species and sensitive habitats within the Project ESL was conducted using database searches, informally consulting with resource agencies (i.e., CDFG, NMFS, USFWS), and reviewing environmental documents and technical studies prepared for other projects in the vicinity. The California Natural Diversity Database (CNDDB) was the principal database queried as part of this evaluation. The CNDDB contains occurrence records for special-status plant and animal species, as well as sensitive natural vegetation communities, by USGS quadrangle. A search of the *Rush Creek Lakes, Trinity Dam, Papoose Creek, Junction City, Weaverville, Lewiston, French Gulch, Hoosimbim Mountain,* and *Bully Choop Mountain* quadrangles was conducted for the proposed Project. In addition to the database search, a written request was submitted to the USFWS for a list of special-status species with potential to occur in the project area. Agency representatives from the Corps, CDFG, NMFS, and USFWS were contacted to discuss specific biological resource issues associated with the proposed project, including potential impacts and suggested mitigation measures.

Reconnaissance-level site visits were conducted between September 20, and October 1, 2002, to characterize the fisheries resources, aquatic habitats, and potential suitable spawning habitat present within the ESL. The purpose of this assessment was to identify and map aquatic habitat within the project ESLs. A BA/EFHA was prepared to comply with Section 7 of the ESA and Section 305(b)(2) of the MSA, respectively (**Appendix F**). The BA/EFHA summarizes the results of the field surveys, determines whether species included in the assessment (i.e., SONCC ESU coho salmon) could be adversely affected by construction of the project, and describes mitigation measures to reduce or avoid impacts to these species and their habitat. The BA/EFHA also evaluates the project's potential effect on essential fish habitat for coho and chinook salmon.

Significance Criteria

Significance criteria used to assess the potential impacts of the proposed Project on fisheries resources are based on the current scientific understanding of biological requirements and ecological status of the species of interest, and the regulatory standards of county, state, and federal agencies, including the *CEQA Guidelines*. Effects were considered significant for anadromous salmonids and other native fish species if they resulted in any of the following:

- Potential for reductions in the number, or restrictions of the range, of an endangered or threatened native fish species or a native fish species that is a candidate for state listing or proposed for federal listing as endangered or threatened;
- Potential for substantial reductions in the habitat of any native fish species other than those that are listed as endangered or threatened or are candidates or proposed for endangered or threatened status;
- Potential for causing a native fish population to drop below self-sustaining levels;
- Substantial adverse effect, either directly or through habitat modifications, on any native anadromous species identified as a sensitive or special-status fish species in local or regional plans, policies, or regulations;
- Substantial interference with the movement of any native anadromous or resident fish species;
- A conflict with, or violation of, the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan relating to the protection of native anadromous species or resident fish species;
- Mortality of state or federally listed fish species, or species that are candidates for listing or proposed for listing;
- Reductions in the size of a native fish species' population sufficient to jeopardize its long-term persistence;
- Temporary impacts to habitats such that native fish species suffer increased mortality or lowered reproductive success that jeopardizes the long-term persistence of those local populations;
- Permanent loss of designated critical habitat and/or essential habitat of a listed species or special-status native fish species; or
- Reduction in the quantity or quality of habitats in which native fish species populations occur sufficient to reduce the long-term abundance and productivity of local populations.

Impacts and Mitigation Measures

Table 3.6-6 summarizes the potential fishery resource impacts resulting from construction and operation of the proposed Project.

TABLE 3.6-6
SUMMARY OF FISHERY RESOURCE IMPACTS FROM THE PROPOSED TRINITY RIVER BRIDGES PROJECT

Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Alternative 2
1. Construction activities associated with the proposed Trinity River Bridges Project could result in effects on potential spawning and rearing habitat for anadromous fishes, including federally listed coho salmon.	Salt Flat	NI	S	S	S
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A

TABLE 3.6-6
SUMMARY OF FISHERY RESOURCE IMPACTS FROM THE PROPOSED TRINITY RIVER BRIDGES PROJECT

Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Alternative 2
2. Construction activities associated with the proposed Trinity River Bridges Project could result in increased erosion and sedimentation that could adversely affect fishes, including federally listed coho salmon.	Salt Flat	NI	S	S	S
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
3. Construction activities associated with the Trinity River Bridges Project could potentially result in the accidental spill of hazardous materials that could adversely affect fishes, including federally listed coho salmon.	Salt Flat	NI	S	S	S
	Bucktail	NI	S	S	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
4. Construction activities associated with the proposed Trinity River Bridges Project could result in fish passage being temporarily impaired during the in-stream construction phase.	Salt Flat	NI	S	S	S
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	S	S	N/A
5. Construction activities associated with the proposed Trinity River Bridges Project could result in the mortality of rearing fishes, including federally listed coho salmon, during the in-stream construction phase.	Salt Flat	NI	S	S	S
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
6. Implementation of the proposed Trinity River Bridges project would result in the permanent and temporary loss of shaded riverine aquatic habitat.	Salt Flat	NI	S	S	S
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A

Notes:
LS = Less than Significant S = Significant NI = No Impact SU = Significant Unavoidable
N/A = Not Applicable

The following sections provide detailed site-by-site descriptions of the potential impacts to fishery resources and recommended mitigation measures for each project alternative. To reduce redundancy and improve readability, the impacts to the federally listed SONCC coho salmon, special-status (i.e., "species of special concern" for CEQA, and "species of concern" for NEPA) and non-listed fish species are described together under each alternative action for

each project site. Because the threshold for "significance" of an impact is lower (i.e., more restrictive) for threatened and endangered species, impacts are described separately where they differ among species. The effects discussed for the principal species of interest address the full range of potential impacts to anadromous and resident riverine fish communities in the project ESLs.

Salt Flat Bridge

Impact 3.6-1: Construction activities associated with the proposed Trinity River Bridges Project could result in effects on potential spawning and rearing habitat for anadromous fishes, including federally listed coho salmon. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, there would be no effects on spawning and rearing habitat other than those associated with current ongoing actions.

Proposed Action (Replacement Downstream, Private Ownership)

Coho Salmon. No permanent adverse effects on spawning habitat are expected at the Salt Flat Bridge site since all abutments and bents will be located outside the active low flow channel, with the exception of slope protection measures proposed to extend into the deep run in the low flow channel. However, no suitable salmonid spawning habitat has been identified within this run. Temporary effects on spawning habitat associated with bridge construction and demolition near the Salt Flat site are expected to be limited to short-term, localized sedimentation caused by re-settling of silt disturbed by in-water work activities. Silt disturbance associated with installation of right bank slope protection will be minimized by use of a geotextile fabric underlayment between the soil and riprap. The amount of silt disturbed by this activity is not expected to significantly impact downstream spawning areas. Spawning-sized gravels will be used for fill to create a temporary crossing at the Salt Flat side-channel and in the main channel to create temporary access ramps for the removal of existing piers. Gravel fill will be graded to existing streambed and bank contours after the work is complete. Because the Salt Flat Bridge site is near documented spawning areas, during periods of high river flows these graded gravels may mobilize and augment spawning areas on downstream riffles. Construction of the right bank abutment and the single column bent within and near the active low-flow channel is planned for completion during the fall/winter of 2003-2004 (outside of the normal June 15 to September 15 dry season in-river construction period). Consequently, some in-river construction will take place during the migration and spawning seasons for coho salmon.

Suitable rearing habitat for juvenile coho salmon and other salmonids occurs within the ESL defined for the Salt Flat Bridge site. Permanent, direct effects on physical rearing habitat associated with bridge construction will result from construction activities within and near the low flow channel. Work on the mid-channel bar bent requires building a temporary gravel fill crossing in the left side-channel that will directly affect coho rearing habitat. Riprap slope protection on the right bank will extend into the low-flow channel resulting in a permanent alteration to juvenile coho rearing habitat. The extent of this habitat alteration is limited to about 80 lineal feet of run habitat adjacent to the right bank. Riprap has been shown to be, in general, a less suitable rearing habitat for species such as chinook salmon compared to natural stream banks and their associated SRA habitat values (Michney and Hampton 1984; Michney and Deibel 1986); however, the applicability of this finding to coho salmon could not be confirmed. Nevertheless, SRA

habitat and large woody debris (LWD) were found to play a major role in habitat preferences of both fry and juvenile coho salmon in the Trinity River (Hampton 1988).

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon. Construction of the right bank abutment and the single column bent within and near the active low-flow channel is planned for completion during the fall/winter of 2003-2004 (outside of the normal June 15 to September 15 dry season in-river construction period). Consequently, some in-river construction will take place during the migration and spawning seasons, as well as during fry emergence and rearing, for spring- and fall-run chinook salmon. Spring- and fall-run chinook salmon are known to spawn in suitable habitats within the side-channel at the Salt Flat site during the proposed in-water construction season. Construction and vehicle use of the side-channel crossing at this site could disturb or injure spawning adults, or result in mortality of incubating eggs in disturbed nests. Spring-run chinook juveniles are known to rear throughout the year within the ESL.

Steelhead. Potential impacts to the KMP ESU steelhead populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon. Summer, fall, and winter runs of KMP ESU steelhead are known to migrate, stage and spawn (as adults), and rear (as juveniles) within the project ESL.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon and other anadromous salmonids. Additionally, specific potential in-water construction impacts to Pacific lamprey include disturbance of, or damage to, nests that may be built in the shallow gravel areas at/or near the side-channel crossing during the early summer. The removal of large woody debris at the site would potentially further impact adult Pacific lamprey by reducing holding and hiding habitat, which is particularly important for upstream migrant adults.

Alternative 1 (Replacement Upstream, Private Ownership)

Coho Salmon. Selection of Alternative 1 by BOR, BLM, and the County will result in similar temporary and permanent construction-related impacts to riverine habitats as those incurred by the Proposed Action. Most of the expected benefits of the Proposed Action would be met. Subsequent effects on coho spawning and rearing habitats will be analogous to those described for the Proposed Action. The distinction between this alternative and the Proposed Action is

- the placement of the right abutment approximately 50 feet upstream from that described in the Proposed Action. This will result in a change in riprap location from the run and corner pool associated with the Proposed Action, shifting upstream to a shallow, swift run.
- the placement of the bent will be shifted upstream, and the temporary gravel work platform and access crossing will be upstream of the existing bridge.

Chinook Salmon. Selection of Alternative 1 by BOR, BLM, and the County would result in similar temporary and permanent construction-related impacts to spawning and rearing habitat for Upper Klamath-Trinity Rivers ESU chinook salmon as those associated with the Proposed Action.

Steelhead. Selection of Alternative 1 by BOR, BLM, and the County would result in similar temporary and permanent construction-related impacts to spawning and rearing habitat for KMP ESU steelhead as those associated with the Proposed Action.

Pacific Lamprey. Selection of Alternative 1 by BOR, BLM, and the County would result in similar temporary and permanent construction-related impacts to spawning and rearing habitat for Pacific lampreys as those associated with the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Coho Salmon. Selection of Alternative 2 by BOR, BLM, and the County will result in some additional temporary and permanent construction-related impacts to riparian, SRA, and riverine habitats given the larger footprint for this alternative. Most of the expected benefits of the Proposed Action would be met. Subsequent effects on coho spawning and rearing habitats will be analogous to those described for the Proposed Action. The distinction between this alternative and the Proposed Action is

- the placement of the right abutment, approximately 50 feet upstream from that described in the Proposed Action. This will result in a change in riprap location from the run and corner pool associated with the Proposed Action, shifting upstream to a shallow, swift run.
- the placement of the bent will be shifted upstream, and the temporary gravel work platform and access crossing will be upstream of the existing bridge.
- increased road width, and paving may result in a nominal increase in runoff to the river.

Chinook Salmon. Selection of Alternative 2 by BOR, BLM, and the County would result in similar temporary and permanent construction-related impacts to spawning and rearing habitat for Upper Klamath-Trinity Rivers ESU chinook salmon as those associated with the Proposed Action and Alternative 1.

Steelhead. Selection of Alternative 2 by BOR, BLM, and the County would result in similar temporary and permanent construction-related impacts to spawning and rearing habitat for KMP ESU steelhead as those associated with the Proposed Action and Alternative 1.

Pacific Lamprey. Selection of Alternative 2 by BOR, BLM, and the County would result in similar temporary and permanent construction-related impacts to spawning and rearing habitat for Pacific lampreys as those associated with the Proposed Action and Alternative 1.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1; and Alternative 2

SF-1a: Timing of construction activities within the active low flow channel of the Trinity River shall be limited to June 15th through September 15th, or later if permitted by CDFG and NMFS (dependent upon weather and biological conditions), to avoid, or minimize, impacts to rearing juvenile and adult salmonids. An initial

extension to this in-water construction period is requested for the Salt Flat site, where in-water work will take place during the fall/winter 2003-2004 (outside of the June 15 to September 15 dry season in-river construction period) during the first year of construction to meet proposed time schedules outlined in Chapter 2. In-water construction and demolition will be restricted to the June 15th to September 15th period during all subsequent years' work.

SF-1b: Disturbance of LWD shall be avoided when possible. LWD necessarily removed from the construction area would be stockpiled at the construction site for replacement in the Trinity River at an appropriate location within the site as determined by a fishery biologist.

SF-1c: Slope protection for road approaches and bridge abutments extending into the channel or that may contact ordinary high water and flood waters of the Trinity River shall be composed only of appropriately sized, clean, shot quarried rock or boulder material.

SF-1d: Fill gravels used on the streambeds and stream banks will be composed of washed, spawning-sized gravels from a local Trinity Basin source. Gravel will be washed to remove any silts, sand, clay, and organic matter and will be free of contaminants such as petroleum products. Washed gravel will pass the Caltrans cleanliness test #227 with a value of 85 or greater.

SF-1e: To avoid or minimize potential injury and mortality of fish during excavation and placement of fill or riprap materials within the active low flow channel, equipment shall be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area. The contractor shall be instructed that before submerging an excavator bucket or laying gravel or riprap below the water surface, the excavator bucket will be operated to "tap" the surface of the water, or a person will wade ahead of fill placement equipment to scare fish away from the work area.

SF-1f: The moderate depth run and pool habitat within the active low flow channel adjacent to the right bank abutment of the new bridge will be encroached by placement of riprap revetment. Engineered riprap is designed with a geotextile filter fabric underlayment. The purpose of this material is to keep fine sediment from migrating out from the toe of riprap. Riprap shall be composed only of appropriately sized, clean, shot rock or boulder material.

SF-1g: The temporary side-channel crossing shall be located to minimize channel changes and the amount of excavation or fill needed for construction. Fill shall be formed from washed, spawning-sized gravel, between ⅜- and four inches in diameter (Pollock 1969; Bell 1986). When use of this temporary crossing is completed, any fill shall be spread and contoured to match the original side-channel streambed and banks.

SF-1h: Fill material used to construct the working platforms for removal of the existing bridge's mid-channel piers shall be formed from washed, spawning-sized gravel, between ⅜- and four inches in diameter. This material will be graded to match natural streambed and bank contours at the site after completion of work. It is anticipated that each of these work platforms will be in place for up to seven days.

SF-1i: Because the proposed construction schedule includes in-river work that could impact spawning spring- and fall-run chinook salmon, coho salmon, and steelhead or their eggs once in the gravel, anti-spawning mats (heavy-gauge wire fencing secured over streambed gravels) will be installed in areas identified as potential spawning sites within the immediate vicinity of the side-channel crossing and single mid-channel bent. Anti-spawning mats will be installed prior to the beginning of spawning (i.e., on/or before September 1).

Significance after Mitigation: *Less than Significant*

Impact 3.6-2: Construction activities associated with the proposed Trinity River Bridges Project could result in increased erosion and sedimentation levels that could adversely affect fishes, including federally

listed coho salmon. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, there would be no increase in erosion or sedimentation levels that could adversely affect fish species other than that associated with current ongoing actions.

Proposed Action (Replacement Downstream, Private Ownership)

Coho Salmon. Activities related to the construction of the Salt Flat Bridge, roadway improvements, and demolition and removal of the existing bridge will result in the localized loss of vegetation and general disturbance to the soil. Removal of vegetation and soil can accelerate erosion processes within the project ESL and increase the potential for sediment to enter the Trinity River. The turbidity of a water body is related to the concentration of suspended solids. Suspended solids and turbidity generally do not acutely affect aquatic organisms unless they reach extremely high levels (i.e., levels of suspended solids reaching 25 mg/L). At these high levels, suspended solids can adversely affect the physiology and behavior of aquatic organisms and may suppress photosynthetic activity at the base of food webs, impacting aquatic organism either directly or indirectly (Alabaster and Lloyd 1980).

Sedimentation of in-stream gravels could significantly change the composition and abundance of aquatic invertebrate populations, thus impacting food availability for salmonids. Sedimentation of fines in cobble and gravel substrates would also reduce the amount of interstitial spacing between bed materials that provide a source cover for fry and juvenile salmonids. Potential sedimentation of river gravels may reduce the quality of suitable rearing and spawning habitats (Cordone and Kelley 1961).

The magnitude of potential impacts to the Trinity River resulting from the Proposed Action varies by bridge site. At Salt Flat, the single column bent will be constructed outside of the active low-flow channel, but it will require construction of a temporary wet ford crossing through the left side-channel, to provide access to the mid channel bar, and a gravel work platform for installing the bent. Approximately, 450 ft^2 of side-channel habitat will be temporarily impacted (duration=approximately 1 year) during construction by the addition of a gravel base and steel landing mat and occasional equipment crossing (20 to 40 times through construction). Removal of the temporary crossing after construction will restore the side-channel habitat. These activities will likely stir up streambed sediments but are not likely to add silt material to the river. The effects will be localized and temporary (i.e., on the order of 0.5 hour during gravel placement and several minutes during vehicle crossings). Use of washed, spawning-sized gravels and the cleaning of vehicle wheels prior to crossing the side-channel will minimize the effects of this action on fish habitat. Any juvenile coho salmon rearing in the area during gravel placement or vehicle crossings may be temporarily displaced or their social behavior may be temporarily disrupted by turbidity created during this activity. Behavioral disruption, even temporarily, could result in some increased vulnerability to competitive interactions or predation for juvenile coho salmon (Berg and Northcote 1985).

Construction of the right abutment engineered fill and riprap slope at Salt Flat will require work near and within the channel along the right bank. Approximately 80 linear feet of riparian habitat adjacent to and overhanging a deep run habitat will be altered. A small amount of disturbed soil and silt may be mobilized during excavation and contouring of the abutment slope and toe. This effect will be localized and temporary. Silt disturbance associated with installation of right bank slope protection will be minimized by use of a geotextile fabric underlayment between the

soil and riprap. Any turbidity and silt effects will decline downstream of the site as silt re-settles and dissipates through the water column. Some silt may settle near or on known spawning habitat located about 200-feet downstream and across the main river channel from the bridge site, but is not expected to significantly impair redd excavation or spawning by coho salmon. Adult coho salmon migrants may begin migrating through the project ESL by mid-October, and pulses of turbidity and in-water work may locally and temporarily affect upstream migration. This is not expected to result in significant effects on migration timing or subsequent spawning. Any juvenile salmon rearing in the area during gravel placement or vehicle crossings may be temporarily displaced or their social behavior may be temporarily disrupted by turbidity created during this activity. Behavioral disruption, even temporarily, could result in some increased vulnerability to competitive interactions or predation for juvenile coho salmon (Berg and Northcote 1985).

Demolition of the existing bridges at Salt Flat will result in localized and temporary disturbance of streambed silt and stream bank soils due to activities associated with removal of mid-channel piers and bank side bridge abutments. Incorporation of conservation measures to control erosion and sedimentation should limit the amount of soil erosion and sedimentation associated with demolition activities. Stream banks will be stabilized and restored with riparian vegetation after existing bridge abutments have been removed.

At the Salt Flat site, streambed silt will likely be stirred up during placement of temporary gravel ramps in the river channel for access to and removal of mid-channel piers. These ramps will be in place for five to 10 days during pier removal and then contoured to the streambed after work is completed. Silt disturbance, turbidity, and any sedimentation of the streambed associated with these activities are expected to be localized and temporary. Some silt may settle near or on known spawning habitats located downstream of each of these sites, but is not expected to impair redd excavation or spawning. All demolition work will be performed between June 15th and September 15th to avoid effects on adult coho migration and spawning, and smolt emigration. Any juvenile coho salmon rearing in the area during gravel placement or vehicle crossings may be temporarily displaced or their social behavior may be temporarily disrupted by turbidity created during this activity. Behavioral disruption, even temporarily, could result in some increased vulnerability to competitive interactions or predation for juvenile coho salmon (Berg and Northcote 1985).

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon. Construction of the right bank abutment and the single column bent within and near the active low-flow channel is planned for completion during the fall/winter of 2003-2004 (outside of the normal June 15 to September 15 dry season in-river construction period). Consequently, some in-river construction disturbance of silt and potential erosion could take place during the migration and spawning seasons, as well as during fry emergence and rearing, for spring- and fall-run chinook salmon. Spring- and fall-run chinook salmon are known to spawn in suitable habitats within the side-channel at the Salt Flat site during the proposed in-water construction season. Construction and vehicle use of the side-channel crossing at this site may disturb silts that could settle on incubating eggs or alevins. Spring-run chinook juveniles are known to rear throughout the year within the ESL.

Steelhead. Potential impacts to the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon. Summer, fall,

and winter runs of KMP ESU steelhead are known to migrate, stage (as adults), and rear (as juveniles) within the project ESL, throughout the proposed construction season. All three runs spawn generally during the winter.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon and other anadromous salmonids. Additionally, adult Pacific lampreys migrate upstream to spawn from spring through early summer and again in the fall. Larval lampreys inhabit the river year-round. Siltation of nests that may be built in suitable habitats (e.g., the shallow gravel areas at/or downstream of the side-channel crossing during the early summer) could occur. Filter feeding by larval lampreys could be disrupted by an increase of suspended sediments caused by construction-related erosion, although this impact would be very localized and temporary.

Alternative 1 (Replacement Upstream, Private Ownership)

Coho Salmon. Selection of Alternative 1 by BOR, BLM, and the County will result in similar temporary effects on erosion and sedimentation levels as those described for the Proposed Action. Most of the expected benefits of the Proposed Action would be met. The distinction between this alternative and the Proposed Action is

- the placement of the right abutment, approximately 50 feet upstream from that described in the Proposed Action. This will result in a change in riprap location from the run and corner pool associated with the Proposed Action, shifting upstream to a shallow, swift run.
- the placement of the bent will be shifted upstream, and the temporary gravel work platform and access crossing will be upstream of the existing bridge.

Chinook Salmon. Selection of Alternative 1 by BOR, BLM, and the County would result in similar temporary construction-related effects on erosion and sedimentation impacts for Upper Klamath-Trinity Rivers ESU chinook salmon as those associated with the Proposed Action.

Steelhead. Selection of Alternative 1 by BOR, BLM, and the County would result in similar temporary construction-related effects on erosion and sedimentation impacts for KMP ESU steelhead as those associated with the Proposed Action.

Pacific Lamprey. Selection of Alternative 1 by BOR, BLM, and the County would result in similar temporary construction-related effects on erosion and sedimentation impacts for Pacific lampreys as those associated with the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Coho Salmon. Selection of Alternative 2 by BOR, BLM, and the County will result in similar temporary construction-related effects on erosion and sedimentation levels though this alternative does have a the larger footprint than the Proposed Action. Most of the expected benefits of the Proposed Action would be met. The distinction between this alternative and the Proposed Action is

- the placement of the right abutment, approximately 50 feet upstream from that described in the Proposed Action. This will result in a change in riprap location from the run and corner pool associated with the Proposed Action, shifting upstream to a shallow, swift run.

- the placement of the bent will be shifted upstream, and the temporary gravel work platform and access crossing will be upstream of the existing bridge.
- increased road width, and paving may result in a nominal increase in runoff to the river.

Chinook Salmon. Selection of Alternative 2 by BOR, BLM, and the County would result in similar temporary construction-related erosion and sedimentation impacts for Upper Klamath-Trinity Rivers ESU chinook salmon as those associated with the Proposed Action.

Steelhead. Selection of Alternative 2 by BOR, BLM, and the County would result in similar temporary construction-related erosion and sedimentation impacts for KMP ESU steelhead as those associated with the Proposed Action.

Pacific Lamprey. Selection of Alternative 2 by BOR, BLM, and the County would result in similar temporary construction-related erosion and sedimentation impacts for Pacific lampreys as those associated with the Proposed Action.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1; and Alternative 2

SF-2a: Erosion control work shall consist of application of erosion control materials within non-riparian upland areas and approach fills, embankment slopes, excavation slopes, and other areas designated by the project Engineer. These materials shall consist of fiber, native grass and forb seed (e.g., hydroseeding), commercial fertilizer, and water.

SF-2b Activities that increase the erosion potential within the project ESL and action area shall be restricted to the fullest extent possible to the relatively dry summer and early fall period to minimize the potential for rainfall events to mobilize and transport sediment to the Trinity River. If these activities must take place during the late fall, winter, or spring, then temporary erosion and sediment control structures must be in place and operational at the end of each construction day and maintained until disturbed ground surfaces have been successfully revegetated.

SF-2c: Areas where wetland and upland vegetation need to be removed shall be identified in advance of ground disturbance and limited to only those areas that have been approved by BOR.

SF-2d: Hydroseeding, or other Type-D erosion control, shall be applied to areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season. Soils shall not be left exposed during the rainy season.

SF-2e: Filter fences and catch basins shall be placed below all construction activities near the edge of the Trinity River, but not in contact with flowing water, to intercept sediment before it reaches the waterway. These structures shall be installed prior to any clearing or grading activities.

SF-2f: Spoil sites shall be located such that they do not drain directly into surface water features, if possible. If a spoil site drains into a surface water feature, catch basins shall be constructed to intercept sediment before

it reaches the feature. Catch basins will be sized appropriately to allow percolation of effluent through the bottom and the sides rather than overflow. Spoil sites shall be graded and vegetated to reduce the potential for erosion.

SF-2g: Sediment control measures shall be in place prior to the onset of the rainy season and will be monitored and maintained in good working condition until the disturbed areas have been revegetated.

SF-2h: Appropriate monitoring measures shall be implemented by BOR, BLM, and the County to document compliance with the measures described above. Monitoring measures would include turbidity measurements below the work sites, inspection of catch basins and filter fences, and monitoring of revegetation progress. In the event that monitoring detects that turbidity standards are exceeded (see Section 3.5, Water Quality), work shall cease until levels are acceptable.

Significance after Mitigation: *Less than Significant.*

Impact 3.6-3: Construction activities associated with the proposed Trinity River Bridges Project could potentially result in the accidental spill of hazardous materials that could adversely affect fishes, including federally listed coho salmon. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, no potential risk of accidental hazardous material spills exist other than that associated with current ongoing actions.

Proposed Action (Replacement Downstream, Private Ownership)

Coho Salmon. Construction activities typically include the refueling of construction equipment on location. As a result, minor fuel and oil spills may occur, with a risk of larger releases. Without rapid containment and clean up, these materials could be potentially toxic depending on the location of the spill in proximity to surface water features, including the Trinity River. Oils, fuels, and other contaminants could have deleterious effects on all salmonid life stages present within close proximity to construction activities.

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon.

Steelhead. Potential impacts to KMP ESU steelhead populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon.

Pacific Lamprey. Potential impacts to pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon.

Alternative 1 (Replacement Upstream, Private Ownership)

Risk of, and impacts incurred by, construction-related accidental spills of hazardous materials associated with Alternative 1 would be similar to the Proposed Action for all anadromous fish species.

Alternative 2 (Replacement Upstream, Public Ownership)

Risk of, and impacts incurred by, construction-related accidental spills of hazardous materials associated with Alternative 1 would be similar to the Proposed Action and Alternative 1 for all anadromous fish species.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: *N/A.*

Proposed Action; Alternative 1; and Alternative 2

Construction specifications shall include the following measures to reduce potential impacts associated with accidental spills of pollutants (i.e., fuel, oil, grease, etc.) to vegetation and aquatic habitat resources within the project ESL:

SF-3a: Equipment and materials shall be stored away from wetland and surface water features.

SF-3b: Vehicles and equipment used during construction shall receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of materials. Maintenance and fueling shall be conducted in an area at least 150 feet away from the Trinity River.

SF-3c: Spill containment booms will be maintained onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

SF-3d: The contractor will develop and implement site-specific best management practices (BMPs), a water pollution control plan, and emergency spill controls, and will be responsible for containment and removal of any toxins released (Refer to Section 3.5, Water Quality for more information on water quality standards and local ordinances that would govern preparation of guidance plans).

Significance after Mitigation: *Less than Significant*

Impact 3.6-4: Construction activities associated with the proposed Trinity River Bridges Project could result in fish passage being temporarily impaired during the in-stream construction phase. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, fish passage would remain unimpaired other than by those processes associated with current ongoing actions. However, under the No-Action Alternative, the wider flow area and associated reduced backwater elevations, water velocities, and scour depths associated with the Proposed Action would not be realized.

Proposed Action (Replacement Downstream, Private Ownership)

Coho Salmon. Construction activities associated with the proposed project will require permanent placement of one support bent at the Salt Flat Bridge site. The existing Salt Flat Bridge is a four-span structure, with three piers located within, or immediately adjacent to, the low-flow channel. Construction of the new two-span bridge structure (i.e., one support) combined with removal of the old bridge and piers will result in a net increase of riverine habitat and will improve fish passage by reducing channel constrictions and through localized increases in hydraulic velocity.

At the Salt Flat site, construction of the temporary wet ford crossing in the left side-channel will maintain adequate depth and velocity conditions to allow fish passage, and to minimize impacts to aquatic organisms and domestic and agricultural water supplies. Work on the right bank abutment slope will require placement of riprap to the edge of the active low-flow channel during approximately one week of the fall/winter 2003-2004. This action will create very temporary and localized disturbance of silt and turbidity in the river channel. While the proposed construction schedule will avoid impacts to emigrating coho salmon smolts, juvenile coho are known to rear (and transiently migrate locally) within the Project ESL year-round. Adult coho salmon migrants may be expected in the project area by mid-October through December. Pulses of turbidity and in-water work may locally and temporarily affect upstream migration. However, the river channel is sufficiently wide at Salt Flat to allow fish passing the site to avoid the in-channel work area. Construction of temporary gravel fill work ramps at the Salt Flat site for removal of existing bridge piers will not extend across more than one-third of the channel width, and are expected to be in place for no more than 14 days. This in-channel work associated with bridge demolition would be completed in one season between June 15th and September 15th, which would avoid effects on adult and juvenile coho salmon migrations. Based on these factors, the proposed project would potentially result in only temporary effects on adult coho salmon migration passage at the Salt Flat site. Ultimately, improved hydraulic channel conditions resulting from bridge replacement and removal of existing bridge piers would have a net beneficial effect on fish passage at these sites, especially during high river flows.

Chinook Salmon. Potential fish passage impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon. Construction of the right bank abutment and the single column bent within and near the active low-flow channel is planned for completion during the fall/winter of 2003-2004 (outside of the normal June 15 to September 15 dry season in-river construction period). Adult migrants from the spring- and fall runs of chinook salmon would be expected to pass through, stage, and spawn in and near the project ESL during the proposed in-river construction period. While in-river construction and pier removal and bridge demolition activities will generally avoid spring- and fall-run chinook salmon smolt emigrations, spring-run juveniles may be expected to rear year-round within the project ESL and transient local migrations may be potentially affected.

Steelhead. Potential fish passage impacts to KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon. Construction of the right bank abutment and the single column bent within and near the active low-flow channel is planned for completion during the fall/winter of 2003-2004 (outside of the normal June 15 to September 15 dry season in-river construction period). Adult migrants from the summer, fall, and winter runs of steelhead would be expected to pass through, stage, and spawn in and near the project ESL during the proposed in-river construction period. While in-river construction and pier removal and bridge demolition activities will generally avoid steelhead smolt emigrations,

juveniles may be expected to rear year-round within the project ESL and transient local migrations may be potentially affected.

Pacific Lamprey. Potential fish passage impacts to Pacific lamprey populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon and other anadromous salmonids. Construction of the right bank abutment and the single column bent within and near the active low-flow channel is planned for completion during the fall/winter of 2003-2004 (outside of the normal June 15 to September 15 dry season in-river construction period). Adult Pacific lamprey migrants would be expected to pass through, stage, and spawn in and near the project ESL during the proposed in-river construction period. Emigrant juvenile lamprey would be expected to pass through the project ESL during the proposed construction schedule, especially during high, turbid, river flow events.

Alternative 1 (Replacement Upstream, Private Ownership)

Effects on fish passage resulting from the in-stream construction phase associated with Alternative 1 would be similar to those associated with the Proposed Action for all anadromous fish species.

Alternative 2 (Replacement Upstream, Public Ownership)

Effects on fish passage resulting from the in-stream construction phase associated with Alternative 2 would be similar to those associated with the Proposed Action and Alternative 1 for all anadromous fish species.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: *N/A.*

Proposed Action; Alternative 1; Alternative 2

SF-4a: To minimize effects on upstream and downstream migrant salmonids and lampreys, the timing of in-water construction activities within the typical low-flow channel shall be limited to June 15th through September 15th, or later if permitted by CDFG and NMFS (dependent upon weather and biological conditions), to avoid, or minimize, impacts to migrating fishes. An initial extension to this in-water construction period is requested for the Salt Flat site, where in-water work will take place during the fall/winter 2003-2004 (outside of the June 15th to September 15th dry season in-river construction period) to meet proposed time schedules outlined in Chapter 2. In-water construction and demolition will be restricted to the June 15th to September 15th period during all subsequent years' work.

SF-4b: Use of gravel fill in the left side-channel to form a temporary, stable, wet crossing shall be placed to maintain a water depth of approximately one foot at the crossing to minimize impacts to fish movement. This depth is typical of shallow riffles in the side channel at river flows of Q = 450 cfs. Washed gravel will pass the Caltrans cleanliness test #227 with a value of 85 or greater. Placement of steel landing mat for the temporary crossing shall be made so that the mat is flush to the streambed, or flush to any necessary fill placed on the streambed. The contractor shall perform daily inspection of the temporary side-channel crossing. Debris accumulations on the steel mat will be removed when observed.

SF-4c: Use of gravel to form temporary, stable work platforms for removal of the old bridge piers in the main river channel shall be placed to extend across no greater than one-third the wetted channel width to

minimize effects on fish migration. This will necessitate removing one pier at a time. Washed gravel will pass the Caltrans cleanliness test #227 with a value of 85 or greater. Each gravel platform will be spread and graded to match existing riverbed contours as demolition work is completed. Work platforms will be constructed and used only during the June 15th to September 15th period. It is anticipated that each of these work platforms will be in place for up to seven days.

Significance after Mitigation: *Less than Significant.*

Impact 3.6-5: Construction activities associated with the proposed Trinity River Bridges Project could result in the mortality of adult and juvenile fishes, including federally listed coho salmon, during the in-stream construction phase. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, construction-related mortality of rearing salmonids would not occur other than by those processes associated with current ongoing actions.

Proposed Action (Replacement Downstream, Private Ownership)

Coho Salmon. Coho salmon are known to occur throughout the Trinity River. Suitable coho salmon rearing habitat exists within the Salt Flat ESL and juvenile coho rearing has been documented as well. Most in-stream construction activities are proposed to occur between June 15th and September 15th, except during the first year, when in-river work will be required during the fall/winter of 2003-2004 (outside of the June 15th to September 15th dry season in-river construction period). Direct mortality of emigrating coho smolts would be generally avoided, since outmigration occurs from February through mid-June in the Trinity River. However, young-of-year coho may be expected to rear throughout the river during the construction window. Some adult coho migrants may be expected in the project reach by mid-October. Bridge removal at the Salt Flat site will be done in such a way as to prevent spans and associated materials from falling into the active channel. Bridge pier removal will be performed in a manner that limits the amount of material falling into the river and that subsequently needs to be removed.

Suitable holding pools and runs exist within the Salt Flat project site. Adult coho salmon would be expected to be present and spawning during the late fall/winter portion of the construction window during the first year (from about mid-October to December).

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon. While in-water construction work during the summer/fall/winter would avoid impacts to emigrating fall-run chinook salmon smolts, it could impact the spring-run race of Upper Klamath-Trinity Rivers ESU chinook salmon over this entire duration by disturbing, or injuring, upstream-migrant and staging (over-summering) adults, and rearing juveniles. Construction of the right bank abutment and the single column bent within and near the active low-flow channel is planned for completion during the fall/winter of 2003-2004 (outside of the normal June 15 to September 15 dry season in-river construction period). Consequently, some in-river construction will take place during the migration and spawning seasons, as well as during fry emergence and rearing, for spring- and fall-run chinook salmon.

Steelhead. Potential impacts to the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon. Additionally, in-water construction work could impact the summer, fall, and winter runs of KMP ESU steelhead over the entire duration of the in-water construction period by disturbing, or injuring, upstream-migrant and staging adults, and rearing juveniles. Adult summer and fall-run steelhead can be expected to migrate through the ESL during the entire proposed construction season. Winter-run steelhead would be expected to migrate to the area from November through the winter months. Spawning steelhead of all three runs could spawn within the ESL from February through May. Equipment crossing the side-channel and placement of riprap during these periods could result in injury or mortality to adult and juvenile steelhead.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon and other anadromous salmonids. Additional potential impacts to lampreys include disturbance of, or injury to, adult upstream spawning migration during the late-summer and fall months; and disturbance of, or injury to, lamprey larvae rearing in soft sand and mud deposits along river margins in runs and in pools, in backwater areas, and immediately downstream of bridge piers at the site.

Alternative 1 (Replacement Upstream, Private Ownership)

Construction-related mortality of mortality of adult and juvenile fishes associated with Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction-related mortality of mortality of adult and juvenile fishes associated with Alternative 2 would be similar to the Proposed Action and Alternative 1.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1; and Alternative 2

SF-5a: Timing of construction activities within the active low flow channel of the Trinity River shall be limited to June 15th through September 15th, or later if permitted by CDFG and NMFS (dependent upon weather and biological conditions), to avoid, or minimize, impacts to rearing juvenile and staging adult salmonids. An initial extension to this in-water construction period is requested for the Salt Flat site, where in-water work will take place during the fall/winter 2003-2004 (outside of the June 15th to September 15th dry season in-river construction period) to meet proposed time schedules outlined in Chapter 2. In-water construction and demolition will be restricted to the June 15th to September 15th period during all subsequent years' work.

SF-5b: To avoid or minimize potential injury and mortality of fish during excavation and placement of fill or riprap materials within the active low flow channel, equipment shall be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area. The contractor shall be instructed that before submerging an excavator bucket or laying gravel or riprap below the water surface, the

excavator bucket will be operated to "tap" the surface of the water, or a person will wade ahead of fill placement equipment to scare fish away from the work area.

Significance after Mitigation: *Less than Significant.*

Impact 3.6-6: Implementation of the proposed Trinity River Bridges Project would result in the permanent and temporary loss of shaded riverine aquatic habitat. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, loss of SRA habitat would not occur other than by those processes associated with current ongoing actions.

Proposed Action (Replacement Downstream, Private Ownership)

Coho Salmon. Removal of montane riparian vegetation along the banks of the Trinity River could adversely impact the quality of rearing habitats used by salmonids. Riparian vegetation is important to the maintenance of healthy fish habitat. Riparian areas provide shade and temperature benefits, sediment, nutrient and chemical regulation, stream bank stability, and inputs of large woody debris and organic matter to the channel. Riparian vegetation that is adjacent to the river, a component of SRA habitat, is included as an element of designated critical habitat for the SONCC ESU coho salmon, and a component of EFH for chinook and coho salmon.

Construction activities associated with the proposed Salt Flat Bridge Project would result in impacts to SRA habitat. At the Salt Flat Bridge site the Proposed Action will permanently impact 0.023 acre of riparian wetland, while 0.271 acre will be temporarily impacted.

Since the existing bridge structure and approaches would be used as the construction detours, temporary construction impacts will be minimized and limited to the area downstream of the existing bridge. The proposed Salt Flat Bridge will require temporary construction access above the active low flow channel, across the left side-channel, and on the right bank below the low flow water surface. Impacts in and along the side-channel habitat will be temporary and restored after construction, however, permanent alteration of riverine and riparian habitat by the presence of riprap along the right bank in the Salt Flat ESL will be unavoidable.

Removal of the existing bridge at Salt Flat would allow for restoration of a majority of the acreage of riparian habitat, (i.e., mixture of willows, alders, and cottonwoods), estimated as being lost to the new bridge and alignment. Loss of riparian habitat to the right bank slope protection riprapping at Salt Flat would be replaced by inter-planting the riprap with riparian plants. Therefore, no permanent net loss of SRA features would necessarily occur because of bridge replacement.

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon.

Steelhead. Potential impacts to the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon and other anadromous salmonids.

Alternative 1 (Replacement Upstream, Private Ownership)

Selection of Alternative 1 by BOR, BLM, and the County would result in roughly similar temporary (0.0228 acre) and permanent (0.041 acre) construction-related impacts SRA habitat as the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Selection of Alternative 1 by BOR, BLM, and the County would result in roughly similar temporary (0.248 acre) and permanent (0.049 acre) construction-related impacts SRA habitat as the Proposed Action and Alternative 1.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1; and Alternative 2

To maintain SRA habitat and bank stability adjacent to the bridge abutments, the projects would be designed to avoid and minimize losses of riparian vegetation adjacent to the Trinity River channel. Exclusionary fencing shall be installed along the boundaries of all riparian areas where construction access would have to occur to ensure that impacts to riparian vegetation are minimized. When loss of riparian vegetation within the project ESL is unavoidable, BOR shall implement the following measures:

SF-6a: Prior to construction, a qualified biologist shall count and identify riparian tree and shrub species that would be removed to accommodate construction of the new bridge and roadway approaches.

SF-6b: To mitigate for the loss of riparian habitat, the project would be designed to avoid and minimize losses to SRA features within the project construction limits to the fullest extent possible. When a loss of riparian vegetation is unavoidable, BOR will replant at a ratio of 3:1 (per woody riparian plant) to replace plants lost due to project construction activities. The 3:1 replanting ratio has been determined to be adequate to ensure successful establishment of at least one vigorous plant for replacement mitigation. Replacement of permanently lost riparian habitat would occur within the area previously occupied by the old bridge, which will be removed as part of the project, as well as open areas upstream and downstream of the new bridge and adjacent to the Trinity River. For temporary impacts, a mitigation ratio of 3:1 (per woody riparian plant) will also be used. Revegetation to address temporary impacts shall occur within the construction access areas upon completion of the project.

SF-6c: BOR shall develop and implement a revegetation plan for impacts to riparian wetland that occur during project construction. The revegetation plan should identify appropriate mitigation for impacts, describe planting techniques and locations, and incorporate plantings of native species that would resist invasion of noxious plant species. A revegetation plan is included in the BA (**Appendix F**).

SF-6d: Following the completion of construction activities, plantings shall be established to replace all riparian trees and shrubs that would be removed during project work. All non-native species that are removed will be replaced with native species. Replacement trees and shrubs should be planted in the appropriate season

(i.e., spring or fall) following the completion of construction. Propagules (i.e., shrub cuttings, tree seedlings) shall be obtained either onsite or from a local nursery and planted along the Trinity River within the immediate project ESL. BOR or their contractor shall monitor the plantings annually for up to three years to ensure that trees and shrubs have become established. Supplemental planting would be conducted, as necessary, to ensure that this performance standard is met. Once riparian mitigation has been successfully completed, BOR shall submit a memorandum to the Corps and NMFS documenting the results.

Significance after Mitigation: *Less than Significant.*

Bucktail Bridge

Impact 3.6-1: Construction activities associated with the proposed Trinity River Bridges Project could result in effects on potential spawning and rearing habitat for anadromous fishes, including federally listed coho salmon. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, there would be no effects on coho spawning and rearing habitat other than those associated with current ongoing activities.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Coho Salmon. No permanent adverse effects to salmon spawning or rearing habitat are expected at the Bucktail Bridge site since the Proposed Action does not require any work within the active low-flow channel (Q = 450 cfs). A detour will be constructed around the existing road and culvert located to the west of the existing bridge and outside of the active low-flow channel. It is estimated that the detour will be in operation for a period of about eight to 10 weeks. The detour will be built within the active flood plain, north of the existing road. To construct the detour, the contractor may use an excavator, a dozer or other equipment as needed. The existing bridge will remain in place and open to traffic at all times during construction, and will be used to provide access for homeowners and construction equipment and personnel.

Although suitable rearing habitat for juvenile coho salmon and other salmonids occurs within the Bucktail Bridge ESL, permanent, direct effects on physical rearing habitat from re-alignment of the roadway and construction of the new culvert would not occur since all work at the site would occur outside the active low-flow channel.

Chinook Salmon. Potential impacts on Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be avoided as previously described for coho salmon. Suitable holding pools and runs exist at the Bucktail Bridge Project site and suitable spawning habitat occurs immediately upstream within the project ESL. Spring-run chinook salmon migrate through, over-summer, and stage within the project ESL prior to spawning, during the summer season. Juvenile spring chinook salmon are known to rear in the vicinity of the project ESL.

Steelhead. Potential impacts on the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be avoided as previously described for coho salmon. Adult summer- and fall-run steelhead are known to over-summer and stage in the project ESL. Juvenile steelhead are known to rear in the vicinity of the project ESL.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River would be avoided with implementation of the Proposed Action as described for coho salmon.

Alternative 1 (Raise Existing Upstream Levee)

Coho Salmon. The Alternative 1 action for the Bucktail Bridge site consists of filling-in the overflow weir notch and raising the existing levee on the right bank of the river upstream of the existing bridge. The existing "arc-shaped" levee extends upstream for approximately 450 lineal feet with an average top elevation of 1759.0 msl. This alternative proposes raising the levee and notch to an elevation approximately 0.5 foot above the calculated water surface for the Q_{100} (spring with ROD) flow event. This design increases the height of approximately 200 lineal feet of the existing levee to an approximate elevation of 1759.5 msl, extends the length of the existing levee by 50 feet upstream, and fills in the existing "notch" in the levee. The notch was constructed for flood control purposes during a prior year flood event. Under this alternative, no modifications to Browns Mountain Road would be required. The modeled flows would be forced to pass under the bridge. No portion of the modeled flows would spill over the levee into the wetland area north of the road.

The existing bridge will provide about 1.0 foot of freeboard for Q_{100} (13,100 cfs) at the low chord, which is on the right abutment. The freeboard will be higher at the left abutment. For a flow of 15,000 cfs, the water surface elevation is approximately 0.1 foot below the low chord.

The nominally 12-foot wide levee (measured across the top) will be of typical construction using an earth core armored with riprap.

Since no in-stream work would be required with this alternative, selection of this alternative by BOR, BLM, and the County would not result permanent, direct effects on salmon spawning or rearing habitat. The distinction between this alternative and the Proposed Action is:

- The existing bridge currently just minimally meets recommended design standards for water conveyance and debris clearance at the most probable 50-year and 100-year floods, and for the maximum prescribed channel maintenance flows (USFWS & HVT 1999; Omni-Means, LTD 2000). Under this alternative, the confined flow area provided by levee construction will force high river flows under the bridge.
- Left bank erosion immediately downstream of the bridge may increase due to confinement of high river flows in the main channel. However, this is not expected to result in significant localized habitat impacts.

Chinook Salmon. Selection of Alternative 1 by BOR, BLM, and the county would generally avoid temporary and permanent construction-related impacts to Upper Klamath-Trinity Rivers ESU chinook salmon as does the Proposed Action.

Steelhead. Selection of Alternative 1 by BOR, BLM, and the County would generally avoid temporary and permanent construction-related impacts to KMP ESU steelhead as does the Proposed Action.

Pacific Lamprey. Selection of Alternative 1 by BOR, BLM, and the County would result in similar temporary and permanent construction-related impacts to Pacific lampreys as does the Proposed Action.

Mitigation Measures

No-Action Alternative, Proposed Action, Alternative 1

No significant impacts were identified for the No-Action Alternative, Proposed Action, and Alternative 1; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Impact 3.6-2: Construction activities associated with the proposed Trinity River Bridges Project could result in increased erosion and sedimentation levels that could adversely affect fishes, including federally listed coho salmon. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, there would be no increase in erosion or sedimentation levels that could adversely affect fish species other than that associated with current ongoing actions.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Coho Salmon. Because the existing bridge at the Bucktail site will remain in place, and no construction activities will occur in or near the active low-flow channel, no significant changes in levels of erosion and/or sedimentation in the main river channel are expected if the Proposed Action is implemented at this site. Potential erosion and sedimentation effects for the Proposed Action would be confined to the areas of disturbance associated with installation of the new arch culvert located outside the active low flow channel.

Chinook Salmon. Potential impacts on Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be generally avoided as previously described for coho salmon.

Steelhead. Potential impacts on KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be generally avoided as previously described for coho salmon.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation the Proposed Action would be generally avoided as previously described for coho salmon and other salmonids.

Alternative 1 (Raise Existing Upstream Levee)

Coho Salmon. As described for Impact 3.6-1, selection of this alternative by BOR, BLM, and the County would require raising and extending the right bank levee, upstream of the existing bridge. Since no in-stream work and only minor work near the river bank would occur, selection of this alternative by BOR, BLM, and the County would not result in increased erosion and sedimentation levels that could adversely affect coho salmon or their habitat. The distinction between this alternative and the Proposed Action is

- the existing bridge currently just minimally meets recommended design standards for water conveyance and debris clearance at the most probable 50-year and 100-year floods, and for the maximum prescribed channel

maintenance flows (USFWS & HVT 1999; Omni-Means, LTD 2000). Under this alternative, the confined flow area provided by levee construction will force high river flows under the bridge.

- left bank erosion immediately downstream of the bridge may increase due to confinement of high river flows in the main channel.

Chinook Salmon. Selection of Alternative 1 by BOR, BLM, and the county would generally avoid construction-related erosion and sedimentation impacts to Upper Klamath-Trinity Rivers ESU chinook salmon as does the Proposed Action.

Steelhead. Selection of Alternative 1 by BOR, BLM, and the County would generally avoid construction-related erosion and sedimentation impacts to KMP ESU steelhead as does the Proposed Action.

Pacific Lamprey. Selection of Alternative 1 by BOR, BLM, and the County would generally avoid construction-related erosion and sedimentation impacts to Pacific lampreys as does the Proposed Action.

Mitigation Measures

No-Action Alternative, Proposed Action, and Alternative 1

No significant impacts were identified for the No-Action Alternative; therefore, mitigation is not required. Less than significant impacts were determined to occur under the Proposed Action and Alternative 1. BMPs for erosion and runoff control to protect adjacent wetland habitat values are included as part of the mitigation requirements described in Section 3.7, Vegetation, Wildlife, and Wetlands.

Significance after Mitigation: N/A.

Impact 3.6-3: Construction activities associated with the proposed Trinity River Bridges Project could potentially result in the accidental spill of hazardous materials that could adversely affect fishes, including federally listed coho salmon. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, no potential risk of accidental hazardous material spills exist other than that associated with current ongoing actions.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Coho Salmon. Construction activities typically include the refueling of construction equipment on location. As a result, minor fuel and oil spills may occur, with a risk of larger releases. Without rapid containment and clean up, these materials could be potentially toxic depending on the location of the spill in proximity to surface water features, including the Trinity River. Oils, fuels, and other contaminants could have deleterious effects on all salmonid life stages present within close proximity to construction activities.

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon.

Steelhead. Potential impacts to KMP ESU steelhead populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon.

Pacific Lamprey. Potential impacts to pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon.

Alternative 1 (Raise Existing Upstream Levee)

Risk of, and impacts incurred by, construction-related accidental spills of hazardous materials associated with Alternative 1 would be similar to the Proposed Action for all anadromous fish species.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

Construction specifications shall include the following measures to reduce potential impacts associated with accidental spills of pollutants (i.e., fuel, oil, grease, etc.) to vegetation and aquatic habitat resources within the project ESL:

BT-3a: Equipment and materials shall be stored away from wetland and surface water features.

BT-3b: Vehicles and equipment used during construction shall receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of materials. Maintenance and fueling shall be conducted in an area at least 150 feet away from the Trinity River.

BT-3c: Spill containment booms will be maintained onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

BT-3d: The contractor will develop and implement site-specific BMPs, a water pollution control plan, and emergency spill controls, and will be responsible for containment and removal of any toxins released (Refer to Section 3.5, Water Quality for more information on water quality standards and local ordinances that would govern preparation of guidance plans).

Significance after Mitigation: *Less than Significant.*

Impact 3.6-4: Construction activities associated with the proposed Trinity River Bridges Project could result in fish passage being temporarily impaired during the in-stream construction phase. ***No Impact for the No-Action Alternative, Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, fish passage would remain unimpaired other than by those processes associated with current ongoing actions. However, the benefits of enhanced conveyance of flood flows and associated reduced backwater elevations, water velocities, and scour depths at the Bucktail Bridge associated with implementation of the Proposed Action would not be realized.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Coho Salmon. Construction activities at the Bucktail Bridge site will not require placement of permanent structures within the ordinary high water line of the Trinity River; therefore, construction activities and hydraulic modifications associated with the Proposed Action will not negatively effect fish passage.

Chinook Salmon. No fish passage impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River would result from implementation of the Proposed Action as with coho salmon.

Steelhead. No fish passage impacts to KMP ESU steelhead populations in the Trinity River would result from implementation of the Proposed Action as with coho salmon.

Pacific Lamprey. No fish passage impacts to Pacific lamprey populations in the Trinity River would result from implementation of the Proposed Action as with coho salmon.

Alternative 1 (Raise Existing Upstream Levee)

Coho Salmon. As described for Impact 3.6-1, selection of this alternative by BOR, BLM, and the County would require raising and extending the right bank levee, upstream of the existing bridge. Since no in-stream work and only minor work near the river bank would occur, selection of this alternative by BOR, BLM, and the County would not result in fish passage impairments that could adversely affect coho salmon. The distinction between this alternative and the Proposed Action is

- the existing bridge currently just minimally meets recommended design standards for water conveyance and debris clearance at the most probable 50-year and 100-year floods, and for the maximum prescribed channel maintenance flows (USFWS & HVT 1999; Omni-Means, LTD 2000). Under this alternative, the confined flow area provided by levee construction will force high river flows under the bridge.
- left bank erosion immediately downstream of the bridge may increase due to confinement of high river flows in the main channel.

Chinook Salmon. No fish passage impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River would result from implementation of Alternative 1 as with coho salmon.

Steelhead. No fish passage impacts to KMP ESU steelhead populations in the Trinity River would result from implementation of Alternative 1 as with coho salmon.

Pacific Lamprey. No fish passage impacts to Pacific lamprey populations in the Trinity River would result from implementation of Alternative 1 as with coho salmon.

Mitigation Measures

No-Action Alternative; Proposed Action, Alternative 1

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Impact 3.6-5: Construction activities associated with the proposed Trinity River Bridges Project could result in the mortality of rearing fishes, including federally listed coho salmon, during the in-stream construction phase. ***No Impact for the No-Action Alternative, Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, construction-related mortality of rearing salmonids would not occur other than by those processes associated with current ongoing actions.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Coho Salmon. As previously discussed, no in-stream construction is associated with the Proposed Action. Therefore, direct mortality to emigrating coho smolts and rearing young-of-year coho would be avoided.

Chinook Salmon. The potential for direct mortality impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation of the Proposed Action would be avoided similar to that previously described for coho salmon.

Steelhead. The potential for direct mortality impacts to KMP ESU steelhead populations in the Trinity River resulting from implementation of the Proposed Action would be avoided similar to that previously described for coho salmon.

Pacific Lamprey. The potential for direct mortality impacts to Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be avoided similar to that previously described for coho salmon.

Alternative 1 (Raise Existing Upstream Levee)

Construction-related mortality impacts to rearing fishes would be avoided for all anadromous and resident fishes since no in-river construction activities would be required as described for the Proposed Action.

Mitigation Measures

No-Action Alternative, Proposed Action, Alternative 1

No significant impacts were identified for these alternatives; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Impact 3.6-6: Implementation of the proposed Trinity River Bridges Project would result in the permanent and temporary loss of shaded riverine aquatic habitat. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, loss of SRA habitat would not occur other than by those processes associated with current ongoing actions.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Coho Salmon. Removal of montane riparian vegetation along the banks of the Trinity River could adversely impact the quality of rearing habitats used by salmonids. Riparian vegetation is important to the maintenance of healthy fish

habitat. Riparian areas provide shade and temperature benefits, sediment, nutrient and chemical regulation, stream bank stability, and inputs of large woody debris and organic matter to the channel. Riparian vegetation that is adjacent to the river, a component of SRA habitat, is included as an element of designated critical habitat for the SONCC ESU coho salmon, and as a component of essential fish habitat for chinook and coho salmon.

Construction activities associated with the proposed Bucktail Bridge Project would result in impacts to SRA habitat. At the Bucktail Bridge site the Proposed Action will have no permanent impact on SRA riparian vegetation, while 0.07 acre will be temporarily impacted.

Proposed roadway improvements at the Bucktail Bridge site will require a temporary construction detour to be constructed within the active floodplain, but will not result in the permanent loss of riverine or SRA habitat. By implementing the riparian habitat mitigation incorporated into the Proposed Action through the previously described conservation measures, no permanent net loss of SRA habitat would occur at the Bucktail site due to construction activities.

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon.

Steelhead. Potential impacts to the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon and other anadromous salmonids.

Alternative 1 (Raise Existing Upstream Levee)

Alternative 1 would result in similar temporary and permanent construction-related impacts to riparian SRA habitat as with the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action, Alternative 1

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Poker Bar Bridges

Impact 3.6-1: Construction activities associated with the proposed Trinity River Bridges Project could result in effects on potential spawning and rearing habitat for anadromous fishes, including federally listed coho salmon. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1***

No-Action Alternative

Under the No-Action Alternative, there would be no effects on coho spawning and rearing habitat other than those associated with current ongoing actions.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Coho Salmon. No permanent adverse effects on spawning habitat are expected at the Poker Bar Bridges site since all abutments and bents will be located outside the active low flow channel. Temporary effects on spawning habitats associated with bridge construction and demolitions are expected to be limited to short-term, localized sedimentation caused by re-settling of silt disturbed by in-water work activities. Salmonid use of this site for redd-building and spawning is not expected to be impaired. Sediment runoff will be avoided or minimized by incorporation of conservation measures to control erosion and sedimentation. In-water work would be performed from June 15th to September 15th, which is outside the spawning season for coho salmon in the Trinity River.

Suitable rearing habitat for juvenile coho salmon and other salmonids occurs within the Poker Bar ESL. Permanent, direct effects on physical rearing habitat from construction of the new bridges would not occur since all work on abutments and bents at the site would occur outside the low flow channel.

Chinook Salmon. Potential impacts on Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be similar to those described for coho salmon. Specifically, in-water construction work associated with removal of the existing bridge structures could impact the chinook salmon spawning and rearing habitat through disturbing streambed silts with subsequent re-settling of silt on downstream spawning habitat. However, silt disturbance is expected to be temporary and localized. Suitable holding pools and runs exist within the Poker Bar project site. Spring-run chinook salmon migrate through, over-summer, and stage in these habitats, during the June 15th to September 15th in-river construction timeframe, prior to spawning. Juvenile spring run salmon would be expected to rear in suitable habitat found within the project ESL.

Steelhead. Potential impacts on the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon and spring-run chinook salmon. Specifically, in-water construction work associated with the removal of the existing bridge structures could impact the summer-run race of KMP ESU steelhead over the entire duration of the in-water construction period by disturbing, or injuring, upstream-migrant, and staging (over-summering) adults in suitable habitat, which exist in the deep runs at the bridge sites. Rearing juvenile steelhead would also be expected in these habitats.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for chinook salmon and steelhead. Specific potential in-water construction impacts to Pacific lamprey include disturbance of, or damage to, nests that may be built in the shallow gravel areas downstream of the bridge crossings during the early summer; disturbance of, or injury to, adult upstream migration during the summer and fall months; and disturbance of, or injury to, ammocoetes (lamprey larvae) rearing in soft sand and mud deposits along river margins in runs and pools, in backwater areas, and immediately downstream of bridge piers at the site. The only in-stream construction activity associated with the Proposed Action at Poker Bar is the removal of the existing bridge structures. Removal of large woody debris and SRA habitat at the site would further impact adult Pacific lamprey by reducing holding and hiding habitat.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Because of the similarities between the Proposed Action and Alternative 1, except for alignments relative to the existing bridges, selection of Alternative 1 by BOR, BLM, and the County would result in similar temporary and permanent construction-related impacts to spawning and rearing habitats for all anadromous fishes as those associated with the Proposed Action.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

PB-1a: Timing of construction activities within the active low flow channel of the Trinity River shall be limited to June 15th through September 15th, or later if permitted by CDFG and NMFS (dependent upon weather conditions), to avoid, or minimize, impacts to rearing juvenile and staging adult salmonids. In-water construction and demolition will be restricted to the June 15th to September 15th period during all subsequent years' work.

PB-1b: Disturbance of LWD shall be avoided when possible. Necessarily removed LWD from the construction area would be stockpiled at the construction site for replacement in the Trinity River at an appropriate location within the site as determined by a fishery biologist.

PB-1c: Slope protection for road approaches and bridge abutments that may contact ordinary high water and flood waters of the Trinity River shall be composed only of appropriately sized, clean, shot quarried rock or boulder material.

PB-1d: Fill gravels used on the streambeds and stream banks will be composed of washed, spawning-sized gravels from a local Trinity basin source. Gravel will be washed to remove any silts, sand, clay, and organic matter and will be free of contaminates such as petroleum products. Washed gravel will pass the Caltrans cleanliness test #227 with a value of 85 or greater.

PB-1e: The conservation measures proposed above for other project-related impacts to salmonids are adequate for addressing most other potential impacts to EFH for coho and chinook salmon. Additional site-specific conservation measures that avoid or minimize impacts to EFH are described for each project site in the next section.

Significance after Mitigation: *Less than Significant.*

Impact 3.6-2: Construction activities associated with the proposed Trinity River Bridges Project could result in increased erosion and sedimentation levels that could adversely affect fishes, including federally listed coho salmon. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, there would be no increase in erosion or sedimentation levels that could adversely affect fish species other than that associated with current ongoing actions.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Coho Salmon. Activities related to the construction of the new bridges, roadway improvements, and demolition and removal of existing bridges will result in the localized loss of vegetation and general disturbance to the soil. Removal of vegetation and soil can accelerate erosion processes within the project ESLs and increase the potential for sediment to enter the Trinity River. The turbidity of a water body is related to the concentration of suspended solids. Suspended solids and turbidity generally do not acutely affect aquatic organisms unless they reach extremely high levels (i.e., levels of suspended solids reaching 25 mg/L). At these high levels, suspended solids can adversely affect the physiology and behavior of aquatic organisms and may suppress photosynthetic activity at the base of food webs, impacting aquatic organisms either directly or indirectly (Alabaster and Lloyd 1980).

Sedimentation of in-stream gravels could significantly change the composition and abundance of aquatic invertebrate populations, thus impacting food availability for salmonids. Sedimentation of fines in cobble and gravel substrates would also reduce the amount of interstitial spacing between bed materials that provide a source cover for fry and juvenile salmonids. Potential sedimentation of river gravels may reduce the quality of suitable rearing and spawning habitats (Cordone and Kelley 1961).

The proposed bridge abutments for the Poker Bar Bridges will be located outside of the active low-flow channel (Q = 450 cfs). This will allow the contractor the ability to access and install supports without encroaching upon the active river channel and is expected to avoid causing sedimentation, along with implementation of associated conservation measures.

Demolition of the existing bridge Poker Bar Bridges will result in localized and temporary disturbance of streambed silt and stream bank soils due to activities associated with removal of mid-channel piers and bank side bridge abutments. Incorporation of conservation measures to control erosion and sedimentation should limit the amount of soil erosion and sedimentation associated with demolition activities. Stream banks will be stabilized and restored with riparian vegetation after existing bridge abutments have been removed.

Chinook Salmon. Potential impacts on Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be generally similar to those described for coho salmon.

Steelhead. Potential impacts on the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be generally similar to those previously described for coho salmon and chinook salmon.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be generally similar to those previously described for chinook salmon and steelhead.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Because of the similarities between the Proposed Action and Alternative 1, except for alignments relative to the existing bridges, selection of Alternative 1 by BOR, BLM, and the County would result in similar temporary and

permanent construction-related impacts to spawning and rearing habitats for all anadromous fishes as with the Proposed Action.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

PB-2a: Type D erosion control measures (e.g., hydroseeding) shall be implemented on impacted non-riparian upland areas, and on approach embankments where riparian trees and shrubs cannot be replanted.

PB-2b: Erosion control work shall consist of one application of erosion control materials within non-riparian upland areas and approach fills, embankment slopes, excavation slopes, and other areas designated by the project Engineer. These materials shall consist of fiber, native grass and forb seed, commercial fertilizer, and water.

PB-2c: Any construction activities proposed between the ordinary high water line (bankfull channel) and the low-flow channel water surface of the Trinity River, excluding passive vegetation removal activities above ground level (no soil disturbance), shall be restricted to the dry season (typically June 15th to September 15th).

PB-2d: Activities that increase the erosion potential within the project ESL and action area shall be restricted to the fullest extent possible to the relatively dry summer and early fall period to minimize the potential for rainfall events to mobilize and transport sediment to the Trinity River. If these activities must take place during the late fall, winter, or spring, then temporary erosion and sediment control structures must be in place and operational at the end of each construction day and maintained until disturbed ground surfaces have been successfully revegetated.

PB-2e: Areas where wetland and upland vegetation need to be removed shall be identified in advance of ground disturbance and limited to only those areas that have been approved by BOR.

PB-2f: Type D erosion control (e.g., hydroseeding) shall be applied to areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season. Soils shall not be left exposed during the rainy season.

PB-2g: Filter fences and catch basins shall be placed below all construction activities near the edge of the Trinity River, but not in contact with flowing water, to intercept sediment before it reaches the waterway. These structures shall be installed prior to any clearing or grading activities.

PB-2h: Spoil sites shall be located such that they do not drain directly into surface water features, if possible. If a spoil site drains into a surface water feature, catch basins shall be constructed to intercept sediment before it reaches the feature. Catch basins will be sized appropriately to allow percolation of effluent through the bottom and the sides rather than overflow. Spoil sites shall be graded and vegetated to reduce the potential for erosion.

PB-2i: Sediment control measures shall be in place prior to the onset of the rainy season and will be monitored and maintained in good working condition until the disturbed areas have been revegetated.

PB-2j: Appropriate monitoring measures shall be implemented by BOR, BLM, and the County to document compliance with the measures described above. Monitoring measures would include turbidity measurements below the work sites, inspection of catch basins and filter fences, and monitoring of revegetation progress.

Significance after Mitigation: *Less than Significant.*

Impact 3.6-3: Construction activities associated with the proposed Trinity River Bridges Project could potentially result in the accidental spill of hazardous materials that could adversely affect fishes, including federally listed coho salmon. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, no potential risk of accidental hazardous material spills exist other than that associated with current ongoing actions.

Proposed Action (Replacement Downstream, Private Ownership)

Coho Salmon. Construction activities typically include the refueling of construction equipment on location. As a result, minor fuel and oil spills may occur, with a risk of larger releases. Without rapid containment and clean up, these materials could be potentially toxic depending on the location of the spill in proximity to surface water features, including the Trinity River. Oils, fuels, and other contaminants could have deleterious effects on all salmonid life stages present within close proximity to construction activities. Conservation measures incorporated into the project will avoid or minimize these potential risks.

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon.

Steelhead. Potential impacts to KMP ESU steelhead populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon.

Pacific Lamprey. Potential impacts to pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon.

Alternative 1 (Replacement Upstream, Private Ownership)

Risk of, and impacts incurred by, construction-related accidental spills of hazardous materials associated with Alternative 1 would be similar to the Proposed Action for all anadromous fish species.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

Construction specifications shall include the following measures to reduce potential impacts associated with accidental spills of pollutants (i.e., fuel, oil, grease, etc.) to vegetation and aquatic habitat resources within the project ESL:

PB-3a: Equipment and materials shall be stored away from wetland and surface water features.

PB-3b: Vehicles and equipment used during construction shall receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of materials. Maintenance and fueling shall be conducted in an area at least 150 feet away from the Trinity River.

PB-3c: Spill containment booms will be maintained onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

PB-3d: The contractor will develop and implement site-specific BMPs, a water pollution control plan, and emergency spill controls, and will be responsible for containment and removal of any toxins released (Refer to Section 3.5, Water Quality for more information on water quality standards and local ordinances that would govern preparation of guidance plans).

Significance after Mitigation: *Less than Significant.*

Impact 3.6-4: Construction activities associated with the proposed Trinity River Bridges Project could result in fish passage being temporarily impaired during the in-stream construction phase. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, fish passage would remain unimpaired other than by those processes associated with current ongoing actions. However, the benefits of a wider flow area and associated reduced backwater elevations, water velocities, and scour depths associated with the Proposed Action at the Poker Bar Bridges site would not be realized.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Coho Salmon. The TRRP, BOR, BLM, and the County are proposing to replace the existing structures and/or upgrade existing roadways in order to improve the existing hydraulic conditions and allow for adequate conveyance of flood flows. These hydraulic improvements would not be expected to impact fish passage and in-river construction at the Poker Bar bridges would be limited to brief periods where construction equipment will need to be located within the channel (i.e., demolition of old piers). The in-river construction schedule for the Proposed Action would be limited to the June 15th to September 15th dry season and, therefore, would avoid the coho adult and smolt migration seasons.

Chinook Salmon. Potential impacts on fish passage for Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be generally similar to those described for coho salmon. Although adult spring-run chinook salmon migrate and over-summer during the proposed June 15th to September 15th in-river work period, only very brief in-river work associated with removal of old bridge piers is expected.

Steelhead. Potential impacts on the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be generally similar to those previously described for coho salmon and chinook salmon. Although adult summer- and fall-run steelhead migrate and over-summer during the proposed June 15th to September 15th in-river work period, only very brief in-river work associated with removal of old bridge piers is expected.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be generally similar to those previously described for chinook salmon and steelhead.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Because of the similarities between the Proposed Action and Alternative 1, except for alignments relative to the existing bridges, selection of Alternative 1 by BOR, BLM, and the County would result in a similar level of construction-related fish-passage impacts for all anadromous fishes as with the Proposed Action.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: *N/A*

Proposed Action; Alternative 1

PB-4a: To minimize effects on upstream and downstream migrant salmonids, the timing of in-water construction activities within the typical low-flow channel shall be limited to June 15th through September 15th, or later if permitted by CDFG and NMFS (dependent upon weather conditions). In-water construction and demolition will be restricted to the June 15th to September 15th period during all subsequent years' work.

Significance after Mitigation: *Less than Significant.*

Impact 3.6-5: Construction activities associated with the proposed Trinity River Bridges Project could result in the mortality of rearing fishes, including federally listed coho salmon, during the in-stream construction phase. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1***

No-Action Alternative

Under the No-Action Alternative, construction-related mortality of rearing salmonids would not occur other than by those processes associated with current ongoing actions.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Coho Salmon. As previously discussed, coho salmon are known to occur throughout the Trinity River. Suitable coho salmon rearing habitat exists within the ESL for the Poker Bar Bridges site and juvenile coho rearing is documented to occur as well. The only in-stream construction activities associated with the Proposed Action are associated with brief periods required to remove the old bridge structures. This work would be timed to occur between June 15th and September15th. Direct morality of emigrating coho smolts would be avoided since outmigration occurs from February through mid-June in the Trinity River. However, young-of-year coho may be expected to rear throughout the river

during the construction window, but adult coho migrants would not be expected in the project reach before mid-October.

Chinook Salmon. Potential direct mortality impacts for Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be generally similar to those described for coho salmon. Although adult spring-run chinook salmon migrate and over-summer during the proposed June 15th to September 15th in-river work period, only very brief in-river work associated with removal of old bridge piers is expected. Rearing juvenile spring-run chinook salmon may occur in suitable rearing habitats within the project ESL.

Steelhead. Potential direct mortality impacts for the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be generally similar to those previously described for coho salmon and chinook salmon. Although adult summer- and fall-run steelhead migrate and over-summer during the proposed June 15th to September 15th in-river work period, only very brief in-river work associated with removal of old bridge piers is expected. Rearing juvenile steelhead may occur in suitable rearing habitats within the project ESL.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be generally similar to those previously described for chinook salmon and steelhead. Adult lamprey may migrate and over-summer in suitable habitats within the project ESL.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Because of the similarities between the Proposed Action and Alternative 1, except for alignments relative to the existing bridges, selection of Alternative 1 by BOR, BLM, and the County would result in similar potential direct mortality impacts for all anadromous fishes as with the Proposed Action.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

PB-5a: Timing of construction activities within the active low flow channel of the Trinity River shall be limited to June 15th through September 15th, or later if permitted by CDFG and NMFS (dependent upon weather conditions), to avoid, or minimize, impacts to rearing juvenile and staging adult salmonids and other fishes.

Significance after Mitigation: *Less than Significant.*

Impact 3.6-6: Implementation of the proposed Trinity River Bridges Project would result in the permanent and temporary loss of shaded riverine aquatic habitat. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, loss of SRA habitat would not occur other than by those processes associated with current ongoing actions.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Coho Salmon. Removal of montane riparian vegetation along the banks of the Trinity River could adversely impact the quality of rearing habitats used by salmonids. Riparian vegetation is important to the maintenance of healthy fish habitat. Riparian areas provide shade and temperature benefits, sediment, nutrient and chemical regulation, stream bank stability, and inputs of large woody debris and organic matter to the channel. Riparian vegetation that is adjacent to the river, a component of SRA habitat, is included as an element of designated critical habitat for the SONCC ESU coho salmon.

Construction activities associated with the proposed Poker Bar Bridges Project would result in impacts to SRA habitat. At the Poker Bar Bridges site the Proposed Action will have a permanent impact on 0.055 acre of riparian wetland, while 0.134 acre will be temporarily impacted.

Bridge supports for the proposed Poker Bar Bridges will be placed outside of the low-flow active channel, resulting in no permanent loss of riverine habitat. Removal of the existing bridge structures would allow for restoration of similar acreage of riparian habitat affected by the new bridges. By implementing the riparian habitat mitigation incorporated into the Proposed Action through the conservation measures described below, no permanent net loss of SRA features would occur because of the bridge replacement.

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon.

Steelhead. Potential impacts to the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon and other anadromous salmonids.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Selection of the Alternative 1 by BOR, BLM, and the County would result in similar temporary (0.086 acre) and permanent (0.04 acre) construction-related impacts to riparian and SRA habitat as the Proposed Action.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: *N/A.*

Proposed Action; Alternative 1

To maintain SRA habitat and bank stability adjacent to the bridge abutments, the projects would be designed to avoid and minimize losses of riparian vegetation adjacent to the Trinity River channel. Exclusionary fencing shall be installed along the boundaries of all riparian areas where construction access would have to occur to ensure that impacts to riparian vegetation are minimized. When loss of riparian vegetation within the project ESL is unavoidable, BOR shall implement the following measures:

PB-6a: Prior to construction, a qualified biologist shall count and identify riparian tree and shrub species that would be removed to accommodate construction of the new bridge and roadway approaches.

PB-6b: To mitigate for the loss of riparian habitat, the project would be designed to avoid and minimize losses to SRA features within the project construction limits to the fullest extent possible. When a loss of riparian vegetation is unavoidable, BOR will replant at a ratio of 3:1 (per woody riparian plant) to replace plants lost due to project construction activities. The 3:1 replanting ratio has been determined to be adequate to ensure successful establishment of at least one vigorous plant for replacement mitigation. Replacement of permanently lost riparian habitat would occur within the area previously occupied by the old bridge, which will be removed as part of the project, as well as open areas upstream and downstream of the new bridge and adjacent to the Trinity River. For temporary impacts, a mitigation ratio of 3:1 (per woody riparian plant) will also be used. Revegetation to address temporary impacts shall occur within the construction access areas upon completion of the project.

PB-6c: BOR shall develop and implement a revegetation plan for impacts to riparian wetland that occur during project construction. The revegetation plan should identify appropriate mitigation for impacts, describe planting techniques and locations, and incorporate plantings of native species that would resist invasion of noxious plant species. A revegetation plan is included in the BA (**Appendix F**).

PB-6d: Following the completion of construction activities, plantings shall be established to replace all riparian trees and shrubs that would be removed during project work. All non-native species that are removed will be replaced with native species. Replacement trees and shrubs should be planted in the appropriate season (i.e., spring or fall) following the completion of construction. Propagules (i.e., shrub cuttings, tree seedlings) shall be obtained either onsite or from a local nursery and planted along the Trinity River within the immediate project ESL. BOR shall monitor the plantings annually for up to three years to ensure that trees and shrubs have become established. Supplemental planting would be conducted, as necessary, to ensure that this performance standard is met. Once riparian mitigation has been successfully completed, BOR shall submit a memorandum to the Corps and NMFS documenting the results.

Significance after Mitigation: *Less than Significant.*

Biggers Road Bridge

Impact 3.6-1: Construction activities associated with the proposed Trinity River Bridges Project could result in effects on potential spawning and rearing habitat for anadromous fishes, including federally listed coho salmon. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, there would be no effects on spawning and rearing habitat other than those associated with current ongoing actions.

Proposed Action (Replacement Upstream)

Coho Salmon. No permanent adverse effects on spawning habitat are expected at the Biggers Road Bridge site since all abutments and bents will be located outside the active low flow channel. Temporary effects on spawning habitats near the site associated with bridge construction and demolition is expected to be limited to short-term, localized sedimentation caused by re-settling of silt disturbed by in-water work activities. Salmonid use of the site for redd-building and spawning is not expected to be impaired. Sediment runoff will be avoided or minimized by incorporation of conservation measures to control erosion and sedimentation. Spawning-sized gravels will be used in the main channel at the Biggers Road site to created temporary access ramps to remove existing piers at both sites. Gravel fill will be graded to existing streambed and bank contours after the work is complete. The Biggers Road Bridge site is near documented spawning areas so under high river flows these graded fill gravels may mobilize and augment spawning areas on downstream riffles. Additionally, in-water work would be performed from June 15th to September 15th, which is outside the migration and spawning season for coho salmon in the Trinity River.

Although suitable rearing habitat for juvenile coho salmon and other salmonids occurs within the Biggers Road Bridge ESL, permanent, direct effects on physical rearing habitat from construction of the new bridge would not occur since all work on abutments and bents at the site would occur outside the active low-flow channel.

Chinook Salmon. Potential impacts on Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be similar to those described for coho salmon. Specifically, in-water construction work associated with removal of the existing bridge structure could impact the chinook salmon spawning and rearing habitat through disturbing streambed silts with subsequent re-settling of silt on downstream spawning habitat. However, silt disturbance is expected to be temporary and localized. Suitable holding habitat in deep runs exists within the project ESL. Spring-run chinook salmon migrate through, over-summer, and stage in these habitats, during the June 15th to September 15th in-river construction timeframe, prior to spawning. Juvenile spring run salmon would be expected to rear in suitable habitat found within the project ESL.

Steelhead. Potential impacts on the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon and spring-run chinook salmon. Specifically, in-water construction work associated with the removal of the existing bridge structures could impact the summer-run race of KMP ESU steelhead over the entire duration of the in-water construction period by disturbing, or injuring, upstream-migrant, and staging (over-summering) adults in suitable habitat, which exist in the deep runs at the bridge site. Rearing juvenile steelhead would also be expected in these habitats.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for chinook salmon and steelhead. Specific potential in-water construction impacts to Pacific lamprey include disturbance of, or damage to, nests that may be built in the shallow gravel areas downstream of the bridge crossings during the early summer; disturbance of, or injury to, adult upstream migration during the summer and fall months; and disturbance of, or injury to, ammocoetes (lamprey larvae) rearing in soft sand and mud deposits along river margins in runs and pools, in backwater areas, and immediately downstream of bridge piers at the site. The only in-stream construction activity associated with the Proposed Action at Biggers Road Bridge is the removal of the existing bridge structure. Removal

of large woody debris and SRA habitat at the site would further impact adult Pacific lamprey by reducing holding and hiding habitat.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Because of the similarities between the Proposed Action and Alternative 1, except for raising Steel Bridge Road, selection of Alternative 1 by BOR, BLM, and the County would result in similar temporary and permanent construction-related impacts to spawning and rearing habitats for all anadromous fishes as those associated with the Proposed Action.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

BR-1a: Timing of construction activities within the active low flow channel of the Trinity River shall be limited to June 15th through September 15th, or later if permitted by CDFG and NMFS (dependent upon weather conditions), to avoid, or minimize, impacts to rearing juvenile and staging adult salmonids. In-water construction and demolition will be restricted to the June 15th to September 15th period during all subsequent years' work.

BR-1b: Disturbance of LWD shall be avoided when possible. Necessarily removed LWD from the construction area would be stockpiled at the construction site for replacement in the Trinity River at an appropriate location within the site as determined by a fishery biologist.

BR-1c: Slope protection for road approaches and bridge abutments that may contact ordinary high water and flood waters of the Trinity River shall be composed only of appropriately sized, clean, shot quarried rock or boulder material.

BR-1d: Fill gravels used on the streambeds and stream banks will be composed of washed, spawning-sized gravels from a local Trinity basin source. Gravel will be washed to remove any silts, sand, clay, and organic matter and will be free of contaminates such as petroleum products. Washed gravel will pass the Caltrans cleanliness test #227 with a value of 85 or greater.

BR-1e: Fill material used to construct the working platforms for installation of the single bent, and for removal of the existing bridge's mid-channel pier shall be formed from washed, spawning-sized gravel, between ⅜ and four inches in diameter. This material would be graded to match natural streambed and bank contours at the site after completion of work. It is anticipated that the work platform to access the mid-channel pier will be in place for up to five days.

BR-1f: The conservation measures proposed above for other project-related impacts to salmonids are adequate for addressing most other potential impacts to EFH for coho and chinook salmon. Additional site-specific conservation measures that avoid or minimize impacts to EFH are described for each project site in the next section.

Significance after Mitigation: *Less than Significant*

Impact 3.6-2: Construction activities associated with the proposed Trinity River Bridges Project could result in increased erosion and sedimentation levels that could adversely affect fishes, including federally listed coho salmon. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, there would be no increase in erosion or sedimentation levels that could adversely affect fish species other than that associated with current ongoing actions.

Proposed Action (Replacement Upstream)

Coho Salmon. Activities related to the construction of the new bridge, roadway improvements, and demolition and removal of existing bridges will result in the localized loss of vegetation and general disturbance to the soil. Removal of vegetation and soil can accelerate erosion processes within the project ESLs and increase the potential for sediment to enter the Trinity River. The turbidity of a water body is related to the concentration of suspended solids. Suspended solids and turbidity generally do not acutely affect aquatic organisms unless they reach extremely high levels (i.e., levels of suspended solids reaching 25 mg/L). At these high levels, suspended solids can adversely affect the physiology and behavior of aquatic organisms and may suppress photosynthetic activity at the base of food webs, impacting aquatic organisms either directly or indirectly (Alabaster and Lloyd 1980).

Sedimentation of in-stream gravels could significantly change the composition and abundance of aquatic invertebrate populations, thus impacting food availability for salmonids. Sedimentation of fines in cobble and gravel substrates would also reduce the amount of interstitial spacing between bed materials that provide a source cover for fry and juvenile salmonids. Potential sedimentation of river gravels may reduce the quality of suitable rearing and spawning habitats (Cordone and Kelley 1961).

At the Biggers Road Bridge site, the Proposed Action requires a single column bent to be constructed just outside the low-flow active channel and a temporary gravel fill ramp and work platform to be constructed to provide access for installation of dowels, formwork, reinforcement, and concrete. Work proposed to occur on the left abutment and bent adjacent to the low-flow channel during the fall months, after September 15th of the first year of construction, increases the risk of sediment runoff from the site during storm events. Implementation of conservation measures and BMPs for controlling erosion at this site during construction is expected to avoid or minimize sediment runoff.

Demolition of the existing Biggers Road Bridge will result in localized and temporary disturbance of streambed silt and stream bank soils due to activities associated with removal of mid-channel piers and bank side bridge abutments. Incorporation of conservation measures to control erosion and sedimentation should limit the amount of soil erosion and sedimentation associated with demolition activities. Stream banks will be stabilized and restored with riparian vegetation after existing bridge abutments have been removed.

At the Biggers Road site, streambed silt will likely be stirred up during placement of temporary gravel ramps in the river channel for access to and removal of mid-channel piers. These ramps will be in place for 5 to 10 days during pier removal and then contoured to the streambed after work is completed. Silt disturbance, turbidity, and any sedimentation of the streambed associated with these activities are expected to be localized and temporary. Some silt may settle near or on known spawning habitats located downstream of each of these sites, but is not expected to

impair redd excavation or spawning. All demolition work will be performed during June 15th and September 15th to avoid effects on adult coho migration and spawning, and smolt emigration, as well as spawning by other salmon species. Any juvenile salmon rearing in the area during gravel placement or vehicle crossings may be temporarily displaced or their social behavior may be temporarily disrupted by turbidity created during this activity. Behavioral disruption, even temporarily, could result in some increased vulnerability to competitive interactions or predation for juvenile coho salmon (Berg and Northcote 1985).

Chinook Salmon. Potential impacts on Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be generally similar to those described for coho salmon.

Steelhead. Potential impacts on the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be generally similar to those previously described for coho salmon and chinook salmon.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be generally similar to those previously described for chinook salmon and steelhead.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Because of the similarities between the Proposed Action and Alternative 1, except for raising Steel Bridge Road, selection of Alternative 1 by BOR, BLM, and the County would result in similar construction-related erosion and sedimentation impacts for all anadromous fishes as with the Proposed Action.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

BR-2a: Type D erosion control measures (e.g., hydroseeding) shall be implemented on impacted non-riparian upland areas, and on approach embankments where riparian trees and shrubs cannot be replanted

BR-2b: Erosion control work shall consist of one application of erosion control materials within non-riparian upland areas and approach fills, embankment slopes, excavation slopes, and other areas designated by the project Engineer. These materials shall consist of fiber, native grass and forb seed, commercial fertilizer, and water.

BR-2c: Any construction activities proposed between the ordinary high water line (bankfull channel) and the low-flow channel water surface of the Trinity River, excluding passive vegetation removal activities above ground level (no soil disturbance), shall be restricted to the dry season (typically June 15th – September 15th).

BR-2d: Activities that increase the erosion potential within the project ESL and action area shall be restricted to the fullest extent possible to the relatively dry summer and early fall period to minimize the potential for

rainfall events to mobilize and transport sediment to the Trinity River. If these activities must take place during the late fall, winter, or spring, then temporary erosion and sediment control structures must be in place and operational at the end of each construction day and maintained until disturbed ground surfaces have been successfully revegetated.

BR-2e: Areas where wetland and upland vegetation need to be removed shall be identified in advance of ground disturbance and limited to only those areas that have been approved by BOR.

BR-2f: Type D erosion control (e.g., hydroseeding) shall be applied to areas where vegetation has been removed to reduce short-term erosion prior to the start of the rainy season. Soils shall not be left exposed during the rainy season.

BR-2g: Filter fences and catch basins shall be placed below all construction activities near the edge of the Trinity River, but not in contact with flowing water, to intercept sediment before it reaches the waterway. These structures shall be installed prior to any clearing or grading activities.

BR-2h: Spoil sites shall be located such that they do not drain directly into surface water features, if possible. If a spoil site drains into a surface water feature, catch basins shall be constructed to intercept sediment before it reaches the feature. Catch basins will be sized appropriately to allow percolation of effluent through the bottom and the sides rather than overflow. Spoil sites shall be graded and vegetated to reduce the potential for erosion.

BR-2i: Sediment control measures shall be in place prior to the onset of the rainy season and will be monitored and maintained in good working condition until the disturbed areas have been revegetated.

BR-2j: Appropriate monitoring measures shall be implemented by BOR, BLM, and the County to document compliance with the measures described above. Monitoring measures would include turbidity measurements below the work sites, inspection of catch basins and filter fences, and monitoring of revegetation progress.

Significance after Mitigation: *Less than Significant.*

Impact 3.6-3: Construction activities associated with the proposed Trinity River Bridges Project could potentially result in the accidental spill of hazardous materials that could adversely affect fishes, including federally listed coho salmon. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, no potential risk of accidental hazardous material spills exist other than that associated with current ongoing actions.

Proposed Action (Replacement Upstream)

Coho Salmon. Construction activities typically include the refueling of construction equipment on location. As a result, minor fuel and oil spills may occur, with a risk of larger releases. Without rapid containment and clean up, these materials could be potentially toxic depending on the location of the spill in proximity to surface water features, including the Trinity River. Oils, fuels, and other contaminants could have deleterious effects on all salmonid life stages present within close proximity to construction activities. Conservation measures incorporated into the project will avoid or minimize these potential risks.

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon.

Steelhead. Potential impacts to KMP ESU steelhead populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon.

Pacific Lamprey. Potential impacts to pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Risk of, and impacts incurred by, construction-related accidental spills of hazardous materials associated with Alternative 1 would be similar to the Proposed Action for all anadromous fish species.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

Construction specifications shall include the following measures to reduce potential impacts associated with accidental spills of pollutants (i.e., fuel, oil, grease, etc.) to vegetation and aquatic habitat resources within the project ESL:

BR-3a: Equipment and materials shall be stored away from wetland and surface water features.

BR-3b: Vehicles and equipment used during construction shall receive proper and timely maintenance to reduce the potential for mechanical breakdowns leading to a spill of materials. Maintenance and fueling shall be conducted in an area at least 150 feet away from the Trinity River.

BR-3c: Spill containment booms will be maintained onsite at all times during construction operations and/or staging of equipment or fueling supplies. Fueling trucks will maintain a spill containment boom at all times.

BR-3d: The contractor will develop and implement site-specific BMPs, a water pollution control plan, and emergency spill controls, and will be responsible for containment and removal of any toxins released (Refer to Section 3.5, Water Quality for more information on water quality standards and local ordinances that would govern preparation of guidance plans).

Significance after Mitigation: *Less than Significant.*

Impact 3.6-4: Construction activities associated with the proposed Trinity River Bridges Project could result in fish passage being temporarily impaired during the in-stream construction phase. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, fish passage would remain unimpaired other than by those processes associated with current ongoing actions. However, the benefits of enhanced conveyance of flood flows and associated reduced backwater elevations, water velocities, and scour depths at the Biggers Road Bridge associated with implementation of the Proposed Action would not be realized.

Proposed Action (Replacement Upstream)

Coho Salmon. Construction activities associated with the proposed project will require permanent placement of one support bent at the Biggers Road Bridge site. However, the existing Biggers Road Bridge is a four-span structure, with three piers located within, or immediately adjacent to, the low-flow channel. Construction of the new two-span bridge structures (i.e., one support) combined with removal of the old bridges and piers will result in a net increase of riverine habitat and will improve fish passage by reducing channel constrictions and localized hydraulic velocity increases. Bridge replacement and roadway improvement activities will not require placement of permanent structures within the ordinary high water line of the Trinity River.

Construction of temporary gravel fill work ramps at the Biggers Road site for removal of existing bridge piers will not extend across more than one-third of the channel width, and are expected to be in place for no more than 10 days. This in-channel work associated with bridge demolition would be completed in one season between June 15th and September 15th, which would minimize or avoid effects on adult and juvenile coho salmon migrations. Ultimately, improved hydraulic channel conditions resulting from bridge replacement and removal of existing bridge priers would have a net beneficial effect on fish passage at the site, especially during high river flows.

Chinook Salmon. Potential fish passage impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon. However, adult migrants from the spring and fall runs of chinook salmon would be expected to pass through or stage near the project ESL during the construction season. The temporary placement of gravel fill ramps for pier removal would not preclude fish passage since the majority of the channel width would remain passable.

Steelhead. Potential fish passage impacts to KMP ESU steelhead populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho salmon. However, adult migrants from the summer and fall runs of steelhead would be expected to pass through or stage near the project ESL during the construction season. The temporary placement of gravel fill ramps for pier removal would not preclude fish passage since the majority of the channel width would remain passable.

Pacific Lamprey. Potential fish passage impacts to Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be similar to those previously described for coho and chinook salmon and steelhead.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Effects on fish passage resulting from the in-stream construction phase associated with Alternative 1 would be similar to those associated with the Proposed Action for all anadromous fish species.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Proposed Action; Alternative Action

BR-4a: To minimize effects on upstream and downstream migrant salmonids, the timing of in-water construction activities within the typical low-flow channel shall be limited to June 15th through September 15th, or later if permitted by CDFG and NMFS (dependent upon weather conditions). In-water construction and demolition will be restricted to the June 15th to September 15th period during all subsequent years' work.

Significance after Mitigation: N/A.

Impact 3.6-5: Construction activities associated with the proposed Trinity River Bridges Project could result in the mortality of rearing fishes, including federally listed coho salmon, during the in-stream construction phase. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, construction-related mortality of rearing salmonids would not occur other than by those processes associated with current ongoing actions.

Proposed Action (Replacement Upstream)

Coho Salmon. Coho salmon rearing has not been identified as occurring within the Biggers Road Bridge ESL. However, scheduling of in-stream construction activities between June 15th and September 15th will avoid direct mortality to emigrating coho smolts, since outmigration occurs from February through mid-June in the Trinity River. However, young-of-year coho may be expected to rear throughout the river during the construction window. Some adult coho migrants may be expected in the project reach by mid-October. In-stream construction and demolition activities would take place at the Biggers Road sites. Bridge removal will be done in such a way as to prevent spans and associated materials from falling into the active channel. Bridge pier removal would be performed in a manner that limits the amount of material falling into the river and that subsequently needs to be removed. This in-stream work incorporates mitigation measures to alert and scare adult and juvenile salmonids from the work area to prevent or minimize direct injury and mortality of fish.

Chinook Salmon. Potential direct mortality impacts for Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be generally similar to those described for coho salmon. Although adult spring-run chinook salmon migrate and over-summer during the proposed June 15th to September 15th in-river work period, only very brief in-river work associated with removal of old bridge piers is expected. Rearing juvenile spring-run chinook salmon may occur in suitable rearing habitats within the project ESL.

Steelhead. Potential direct mortality impacts for the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be generally similar to those previously described for coho salmon and chinook salmon. Although adult summer- and fall-run steelhead migrate and over-summer during the proposed

June 15th to September 15th in-river work period, only very brief in-river work associated with removal of old bridge piers is expected. Rearing juvenile steelhead may occur in suitable rearing habitats within the project ESL.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation of the Proposed Action would be generally similar to those previously described for chinook salmon and steelhead. Adult lamprey may migrate and over-summer in suitable habitats within the project ESL.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Because of the similarities between the Proposed Action and Alternative 1, except for raising Steel Bridge Road, selection of Alternative 1 by BOR, BLM, and the County would result in similar construction-related direct mortality impacts for all anadromous fishes as with the Proposed Action.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: *N/A.*

Proposed Action; Alternative 1

BR-5a: To minimize effects on upstream and downstream migrant salmonids, the timing of in-water construction activities within the typical low-flow channel shall be limited to June 15th through September 15th, or later if permitted by CDFG and NMFS (dependent upon weather conditions). In-water construction and demolition will be restricted to the June 15th to September 15th period during all subsequent years' work.

BR-5b: To avoid or minimize potential injury and mortality of fish during excavation and placement of fill or riprap materials within the active low flow channel, equipment shall be operated slowly and deliberately to alert and scare adult and juvenile salmonids away from the work area. The contractor shall be instructed that before submerging an excavator bucket or laying gravel or riprap below the water surface, the excavator bucket will be operated to "tap" the surface of the water, or a person will wade ahead of fill placement equipment to scare fish away from the work area.

Significance after Mitigation: *Less than Significant.*

Impact 3.6-6: Implementation of the proposed Trinity River Bridges Project would result in the permanent and temporary loss of shaded riverine aquatic habitat. ***No Impact for the No-Action Alternative; Significant Impact for Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, loss of SRA habitat would not occur other than by those processes associated with current ongoing actions.

Proposed Action (Replacement Upstream)

Coho Salmon. Removal of montane riparian vegetation along the banks of the Trinity River could adversely impact the quality of rearing habitats used by salmonids. Riparian vegetation is important to the maintenance of healthy fish habitat. Riparian areas provide shade and temperature benefits, sediment, nutrient and chemical regulation, stream

bank stability, and inputs of large woody debris and organic matter to the channel. Riparian vegetation that is adjacent to the river, a component of SRA habitat, is included as an element of designated critical habitat for the SONCC ESU coho salmon.

Construction activities associated with the proposed Biggers Road Bridge Project would result in impacts to SRA habitat. At the Biggers Road Bridge site the Proposed Action will permanently impact 0.052 acre of riparian wetland, while 0.176 acre will be temporarily impacted. The proposed Biggers Road Bridge will place both bridge abutments and one bent outside the low-flow active channel, and will not result in loss of riverine habitat.

Removal of the existing bridge structure at the Biggers Road site would allow for restoration of similar acreages of riparian habitat affected by the new bridge. By implementing the riparian habitat mitigation incorporated into the Proposed Action through the previously described conservation measures, no permanent net loss of SRA features would occur because of bridge replacement.

Chinook Salmon. Potential impacts to Upper Klamath-Trinity Rivers ESU chinook salmon populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon.

Steelhead. Potential impacts to the KMP ESU steelhead populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon.

Pacific Lamprey. Potential impacts on Pacific lamprey populations in the Trinity River resulting from implementation the Proposed Action would be similar to those previously described for coho salmon and other anadromous salmonids.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Selection of Alternative 1 by BOR, BLM, and the County would result in some additional temporary and permanent construction-related impacts to riparian vegetation, but not to the SRA component of the riparian habitat, given work required to raise the Steel Bridge Road associated with this alternative. Most of the expected benefits of the Proposed Action would be met with this alternative. This alternative will meet the recommended design standards for water conveyance and debris clearance at the maximum prescribed flows. The distinction between this alternative and the Proposed Action is

- construction of roadway improvements, including several hundred feet of retaining wall adjacent to Steel Bridge Road. Retaining wall construction would result in a greater riparian vegetation impacts than the Proposed Action, but similar permanent impact to SRA riparian areas adjacent to the bank of the Trinity River. Permanent impact to 0.052 acre of SRA habitat and temporary impact to 0.188 acre of SRA habitat will occur under this Alternative.

Mitigation Measures

No-Action Alternative

No significant impacts were identified; therefore, mitigation is not required.

Significance after Mitigation: *N/A.*

Proposed Action; Alternative 1

To maintain SRA habitat and bank stability adjacent to the bridge abutments, the projects would be designed to avoid and minimize losses of riparian vegetation adjacent to the Trinity River channel. Exclusionary fencing shall be installed along the boundaries of all riparian areas where construction access would have to occur to ensure that impacts to riparian vegetation are minimized. When loss of riparian vegetation within the project ESL is unavoidable, BOR shall implement the following measures:

BR-6a: Prior to construction, a qualified biologist shall count and identify riparian tree and shrub species that would be removed to accommodate construction of the new bridge and roadway approaches.

BR-6b: To mitigate for the loss of riparian habitat, the project would be designed to avoid and minimize losses to SRA features within the project construction limits to the fullest extent possible. When a loss of riparian vegetation is unavoidable, BOR will replant at a ratio of 3:1 (per woody riparian plant) to replace plants lost due to project construction activities. The 3:1 replanting ratio has been determined to be adequate to ensure successful establishment of at least one vigorous plant for replacement mitigation. Replacement of permanently lost riparian habitat would occur within the area previously occupied by the old bridge, which will be removed as part of the project, as well as open areas upstream and downstream of the new bridge and adjacent to the Trinity River. For temporary impacts, a mitigation ratio of 3:1 (per woody riparian plant) will also be used. Revegetation to address temporary impacts shall occur within the construction access areas upon completion of the project.

BR-6c: BOR shall develop and implement a revegetation plan for impacts to riparian wetland that occur during project construction. The revegetation plan should identify appropriate mitigation for impacts, describe planting techniques and locations, and incorporate plantings of native species that would resist invasion of noxious plant species. A revegetation plan is included in the Biological Assessment (**Appendix F**).

BR-6d: Following the completion of construction activities, plantings shall be established to replace all riparian trees and shrubs that would be removed during project work. All non-native species that are removed will be replaced with native species. Replacement trees and shrubs should be planted in the appropriate season (i.e., spring or fall) following the completion of construction. Propagules (i.e., shrub cuttings, tree seedlings) shall be obtained either onsite or from a local nursery and planted along the Trinity River within the immediate project ESL. BOR shall monitor the plantings annually for up to three years to ensure that trees and shrubs have become established. Supplemental planting would be conducted, as necessary, to ensure that this performance standard is met. Once riparian mitigation has been successfully completed, BOR shall submit a memorandum to the Corps and NMFS documenting the results.

Significance after Mitigation: *Less than Significant.*

SECTION 3.7

Vegetation, Wildlife, and Wetlands

3.7 Vegetation, Wildlife, and Wetlands

As described in Section 3.3 (Geology, Fluvial Geomorphology, and Soils), impacts to vegetation, wildlife, and wetland resources are largely a by-product of geomorphic processes, including the amount and timing of flows and the transport and deposition of sediment. This section describes the non-fisheries biological resources (i.e., vegetation, wildlife, and wetlands) that are known to occur within the project study area, as well as the project-related effects on these resources. Fishery resources are described in Section 3.6. Discussion of biological resources under the "Local Setting" is based on a focused literature review, informal consultation with resource agencies, and observations made during site visits. Vegetation communities and wildlife habitats were identified and characterized during field surveys.

3.7.1 Affected Environment/Environmental Setting

Plant Communities

Regional Setting

Prior to dam construction the natural hydrograph of the Trinity River was characterized by high winter and spring flows followed by greatly reduced summer flows (with great inter-year variability). Large winter and spring floods maintained multi-age woody riparian vegetation via channel scouring, periodic channel migration, and varying seed distribution during flow recession. The result was a mosaic of early-successional willow-scrub vegetation combined with patches of more mature willow-alder and alder-dominated associations. Pre-dam aerial photographs indicate that approximately 300 acres of diverse riparian vegetation occurred between Lewiston Dam and the North Fork. Construction of the TRD greatly reduced the magnitude of peak flows, obstructed coarse sediment input from above the dam, and allowed fine sediment to accumulate on channel features that had previously been regularly scoured by flood flows. The result is a more static system that is susceptible to expansion and maturation of woody riparian vegetation. Riparian vegetation has now increased in area by almost 300 percent (to approximately 900 acres) by encroaching into areas that had previously been scoured by flood flows. The expansion and maturation of woody riparian vegetation has had detrimental effects, including the formation of a riparian berm that effectively armors and anchors the riverbanks, thereby preventing the river from meandering within the channel. The establishment of these berms further exacerbates the encroachment and maturation of woody vegetation.

Existing riparian vegetation is most prevalent from the Lewiston Dam to the confluence with the North Fork. This reach includes approximately 330 acres of early-successional willow-dominated vegetation, 170 acres of more mature later-successional alder-dominated vegetation, and 380 acres of willow-alder mix. Between the North Fork and the South Fork, the Trinity River channel is restricted by canyon walls that limit riparian vegetation to a narrow band. In comparison to upstream reaches, peak flows in this reach have been impacted only modestly by dam operations. Between the South Fork and the Klamath River, the Trinity River alternates between confined reaches with little riparian vegetation to alluvial reaches with vegetation similar to pre-dam conditions in the reach between Lewiston Dam and the North Fork. At Trinity and Lewiston Reservoirs, plant species consist of those typically found in standing water and include floating species, rooted aquatic species, and emergent wetland species. Emergent wetland and riparian vegetation is constrained by fluctuating water levels and steep banks.

Local Setting

The following descriptions of plant community types at each project location follow the nomenclature used in *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer 1988). **Figures 3.7-1a-d** illustrate the locations of habitat types mapped throughout the project area at each project location.

Salt Flat

Five habitat types occur within the 9.11-acre Salt Flat Bridge ESL: montane hardwood - conifer, montane riparian (upland), riparian wetland, seasonal wet meadow, and riverine.

Montane hardwood - conifer habitat occurs along the western and eastern project boundaries (**Figure 3.7-1a**). Dominant species in the canopy layer include ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*), with an occasional California black oak (*Quercus kelloggii*). Understory vegetation includes snowberry (*Symphoricarpos albus* var. *laevigatus*), deerbrush (*Ceanothus integerrimus*), and western bracken fern (*Pteridium aquilinum* var. *pubescens*). Annual grassland habitat is a minor component of the montane hardwood-conifer plant community within the Salt Flat Bridge ESL.

Seasonal wet meadow habitat occurs in areas where water does not appear to pond but saturates to the surface for sufficient duration to create a wetland habitat. This habitat type is likely affected by hydrologic factors other than the Trinity River. Within the study area this habitat type is dominated by Himalayan blackberry, curly dock, bur sedge (*Cyperus odoratus*), cockle bur (*Xanthium strumarium*), Italian and perennial ryegrass (*Lolium multiflorum* and *L. perennae*) and rabbitfoot polypogon (*Polypogon monspeliensis*).

Montane riparian (upland) habitat in the project area occurs in areas bordering the Trinity River (**Figure 3.7-1a**). White alder (*Alnus rhombifolia*), narrow-leaved willow (*Salix exigua*), and arroyo willow (*Salix lasiolepis*) dominate the canopy; Oregon ash (*Fraxinus latifolia*) and black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) are found less frequently. The understory is comprised of exotic Himalayan blackberry (*Rubus discolor*), interspersed with occasional California wild rose (*Rosa californica*), virgin's bower (*Clematis ligusticifolia*), torrent sedge (*Carex nudata*), velvet grass (*Holcus lanatus*), rush (*Juncus effusus*), gooseberry (*Ribes divaricatum*), Santa Barbara sedge (*Carex barbarae*), smooth scouring rush (*Equisetum laevigatum*), and poison hemlock (*Conium maculatum*). Riparian wetland habitat in the project ESL includes those portions of the montane riparian habitat that exhibited the three criteria (i.e., vegetation, soils, and hydrology) for classification as jurisdictional wetlands. The riverine habitat includes the open water within the bed and bank of the Trinity River (**Figure 3.7-1a**).

Bucktail

Seven plant communities occur within the 13.71-acre Bucktail Bridge ESL: montane hardwood-conifer, montane riparian (upland), riparian wetland, fresh emergent wetland, seasonal wet meadow, riparian wet meadow, and riverine.

The montane hardwood - conifer plant community occurs along the western project boundary and in several locations in the east portion of the project area (**Figure 3.7-1b**). The canopy is dominated by ponderosa pine, with minor Douglas-fir and incense cedar (*Calocedrus decurrens*) components. Understory vegetation is comprised of birch-leaf mountain mahogany (*Cercocarpus betuloides* var. *betuloides*) and whiteleaf manzanita (*Arctostaphylos viscida*).

The montane riparian (upland) plant community occurs in areas bordering the Trinity River (**Figure 3.7-1b**). Dominant species in the canopy layer include white alder and narrow-leaved willow (*Salix exigua*). Dense thickets of California blackberry (*Rubus ursinus*), lianas of California wild grape (*Vitis californica*), and mugwort (*Artemisia douglasiana*) dominate the understory. Riparian wetland habitat in the Bucktail Bridge ESL includes those portions of the montane riparian habitat that exhibited the three criteria (i.e., vegetation, soils, and hydrology) for classification as jurisdictional wetlands.

Fresh emergent wetland habitat is characterized by erect or floating, rooted, herbaceous hydrophytes. Dominant species within the study area include narrow-leafed cattail (*Typha angustifolia*) and small-fruited bulrush (*Scirpus microcarpus*) within the emergent wetland surrounded by, narrow-leafed willow, red willow (*Salix laevigata*), Himalayan blackberry, and white alder.

Seasonal wet meadow habitat occurs in areas where water does not appear to pond but saturates to the surface for sufficient duration to create a wetland habitat. In addition, this habitat type is likely affected by hydrologic factors other than the Trinity River. Within the Bucktail Bridge ESL this habitat type is dominated by Himalayan blackberry, curly dock, bur sedge, cockle bur, Italian and perennial ryegrass and rabbitfoot polypogon.

Riparian wet meadow habitat occurs adjacent to the Trinity River and is influenced by its hydrology; however it does not display the same vegetation as the montane riparian community. The dominant species include small-fruited bulrush, tufted hairgrass (*Deschampsia cespitosa*), velvet grass, smooth scouring rush, and white alder. Riverine habitat includes the open water within the bed and bank of the Trinity River (**Figure 3.7-1b**).

Poker Bar

Four plant community types occur within the 7.85-acre Poker Bar Bridges ESL: montane hardwood-conifer, montane riparian (upland), riparian wetland, and riverine.

The montane hardwood - conifer community occurs along the southern project boundary (**Figure 3.7-1c**). Dominant species in the canopy layer include ponderosa pine and Douglas-fir, with minor California black oak and Pacific madrone (*Arbutus menziesii*) components. Understory vegetation includes whiteleaf manzanita, service-berry (*Amelanchier alnifolia*), deer brush, and western bracken fern.

The montane riparian (upland) plant community occurs in areas bordering the Trinity River (**Figure 3.7-1c**). Dominant species in the canopy layer include white alder, Goodding's black willow (*Salix gooddingii*), narrow-leaved willow, and black cottonwood. Riparian wetland habitat in the Poker Bar Bridges ESL includes those portions of the montane riparian habitat that exhibited the three criteria (i.e., vegetation, soils, and hydrology) for classification as jurisdictional wetlands.

A large portion of the project area has been recently disturbed and replanted with ornamental fruit trees (i.e., crabapple) and elm (**Figure 3.7-1c**). This area is largely denuded, but some vegetation remains, including willow, cottonwood, wild grape, cheatgrass (*Bromus tectorum*), soft brome (*B. mollis*), clover (*Trifolium* sp.), and pussytoes (*Antennaria* sp.).

The riverine habitat includes the open water within the bed and bank of the Trinity River (**Figure 3.7-1c**).

Biggers Road

Four plant community types occur within the 3.97-acre Biggers Road Bridge ESL: Klamath mixed conifer, montane riparian (upland), riparian wetland, and riverine. A fifth community type, montane hardwood - conifer, occurs directly adjacent but outside the study area.

Klamath mixed conifer habitat occurs along the western project boundary (**Figure 3.7-1d**). The canopy is dominated by Douglas-fir and ponderosa pine; subdominant species include California black oak, Pacific madrone, and canyon live oak (*Quercus chrysolepis*). Other species observed in the understory include poison oak, Sierra gooseberry (*Ribes roezlii*), snowberry, Sierran sweet-cicely (*Osmorhiza occidentalis*), blue wildrye (*Elymus glaucus*), white-flowered hawkweed (*Hieracium albiflorum*), false hedge-parsley (*Torilis arvensis*), and western bracken fern.

Montane riparian (upland) habitat occurs in areas bordering the Trinity River (**Figure 3.7-1d**). Dominant species in the canopy layer include white alder and narrow-leaved willow. Other species observed in the canopy include arroyo willow and Oregon ash; understory species include Himalayan blackberry, sweet pea (*Lathyrus latifolia*), virgin's bower, California wild grape, Douglas' spirea (*Spiraea douglasii*), torrent sedge, velvet grass, rush, and mugwort. Riparian wetland habitat in the Biggers Road Bridge ESL includes those portions of the montane riparian habitat that exhibited the three criteria (i.e., vegetation, soils, and hydrology) for classification as jurisdictional wetlands. The riverine habitat includes the open water within the bed and bank of the Trinity River (**Figure 3.7-1d**).

Additional community types located within the Biggers Road Bridge ESL include portions of Biggers' and Treadwell's grass lawns. Montane hardwood - conifer habitat occurs in the easternmost portion of the project study area but outside of the ESL, on the east side of Steel Bridge Road. Dominant species include canyon live oak and gray pine (*Pinus sabiniana*), with scattered California black oak and ponderosa pine. The understory is sparsely populated; buckbrush (*Ceanothus cuneatus*) and non-native grasses dominate.

Special-Status Plant Species

For the purposes of this evaluation, listed plant species are vascular plants that are (1) designated as rare, threatened, or endangered by the state or federal governments; or (2) are proposed for rare, threatened, or endangered status; and/or (3) are state or federal candidate species. "Other" special-status plant species are listed as Species of Concern by the USFWS; and/or are included on the California Native Plant Society (CNPS) List 1A, 1B, or 2 (CNPS 2001).

A written request was submitted to the USFWS for a list of federal special-status species potentially occurring on the *Weaverville* and *Lewiston* USGS 7.5-minute quadrangles. In a letter dated April 9, 2002, the USFWS provided a list (Reference number 1-14-2002-1083) that included species that currently have endangered, threatened or candidate status within the *Weaverville* and/or *Lewiston* quadrangles (**Appendix I**). This list did not identify any special-status plant species.

Regional Setting

A list of special-status plant species considered for the Trinity River Bridges Project was compiled by performing CNDDB and CNPS Electronic Inventory database searches, informally consulting with the CDFG and the USFWS, and reviewing biological literature for the project region (**Appendix L**). Based upon location and habitat parameters, a total of 27 special-status plant species were identified that could potentially occur within the vicinity of the project

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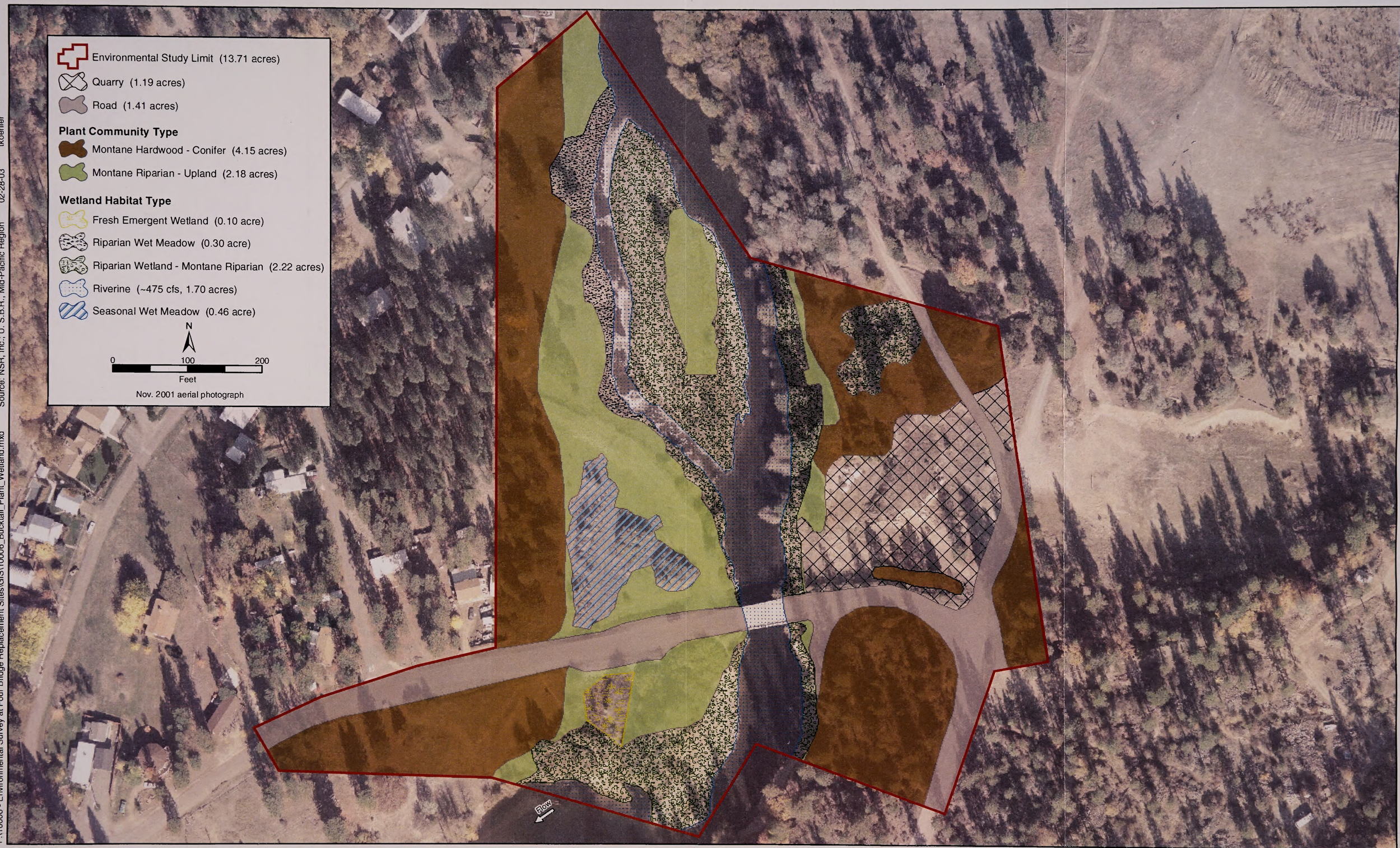
North State Resources, Inc.

Trinity River Bridges Project

Figure 3.7-1a
Salt Flat Plant Communities
Feb. 28, 2003

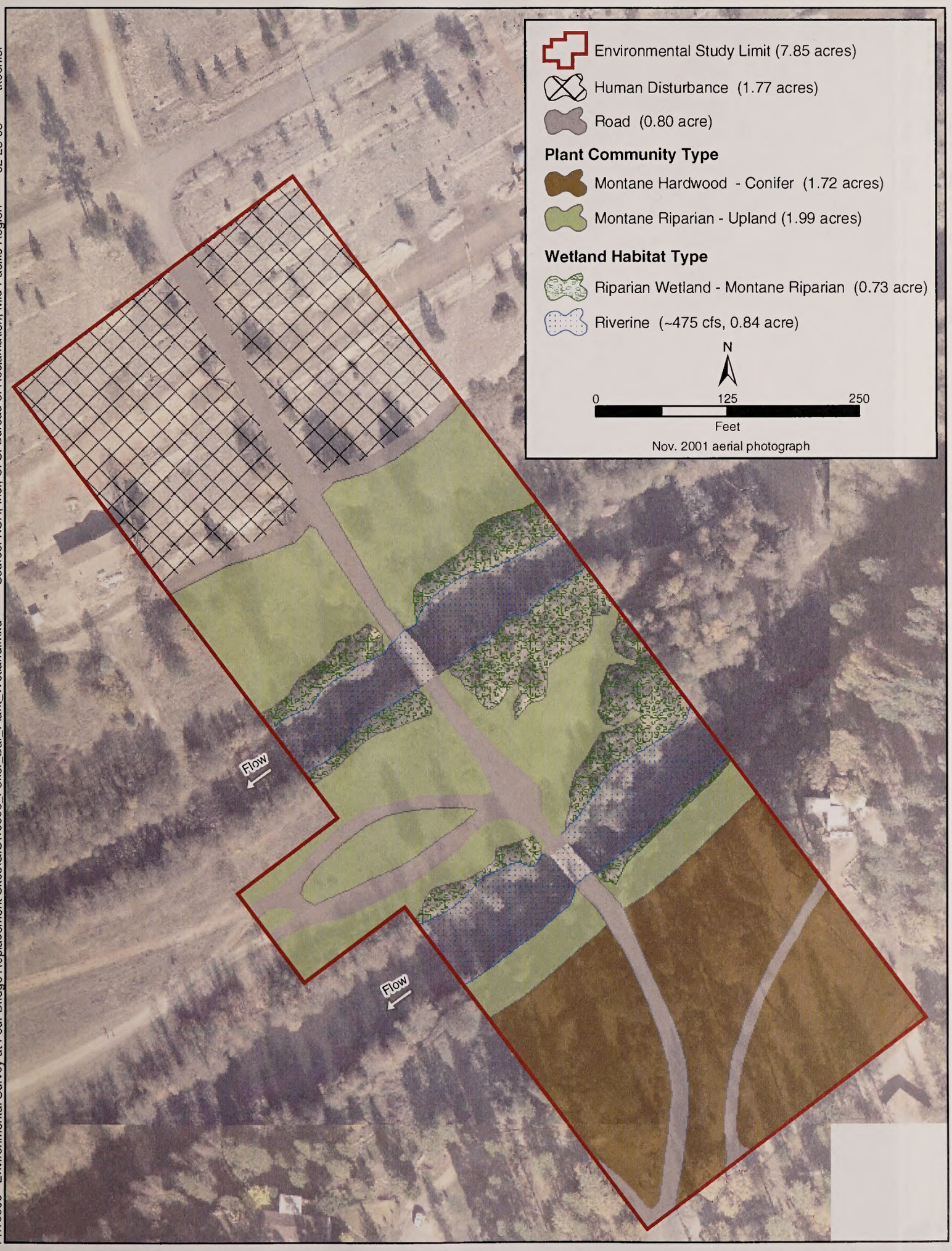


F:\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Bucktail_Plant_Wetland.mxd Source: NSR, Inc.; U. S.B.R., Mid-Pacific Region 02-28-03 tkoehler

North State Resources, Inc.

Trinity River Bridges Project

Figure 3.7-1b
Bucktail Plant Communities
Feb. 28, 2003



F:\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Poker_Bar_Plant_Wetland.mxd Source: NSR, Inc.; U. S. Bureau of Reclamation, Mid-Pacific Region 02-28-03 tkoehler

North State Resources, Inc.

Trinity River Bridges Project

Figure 3.7-1c
Poker Bar Plant Communities
Feb. 28, 2003

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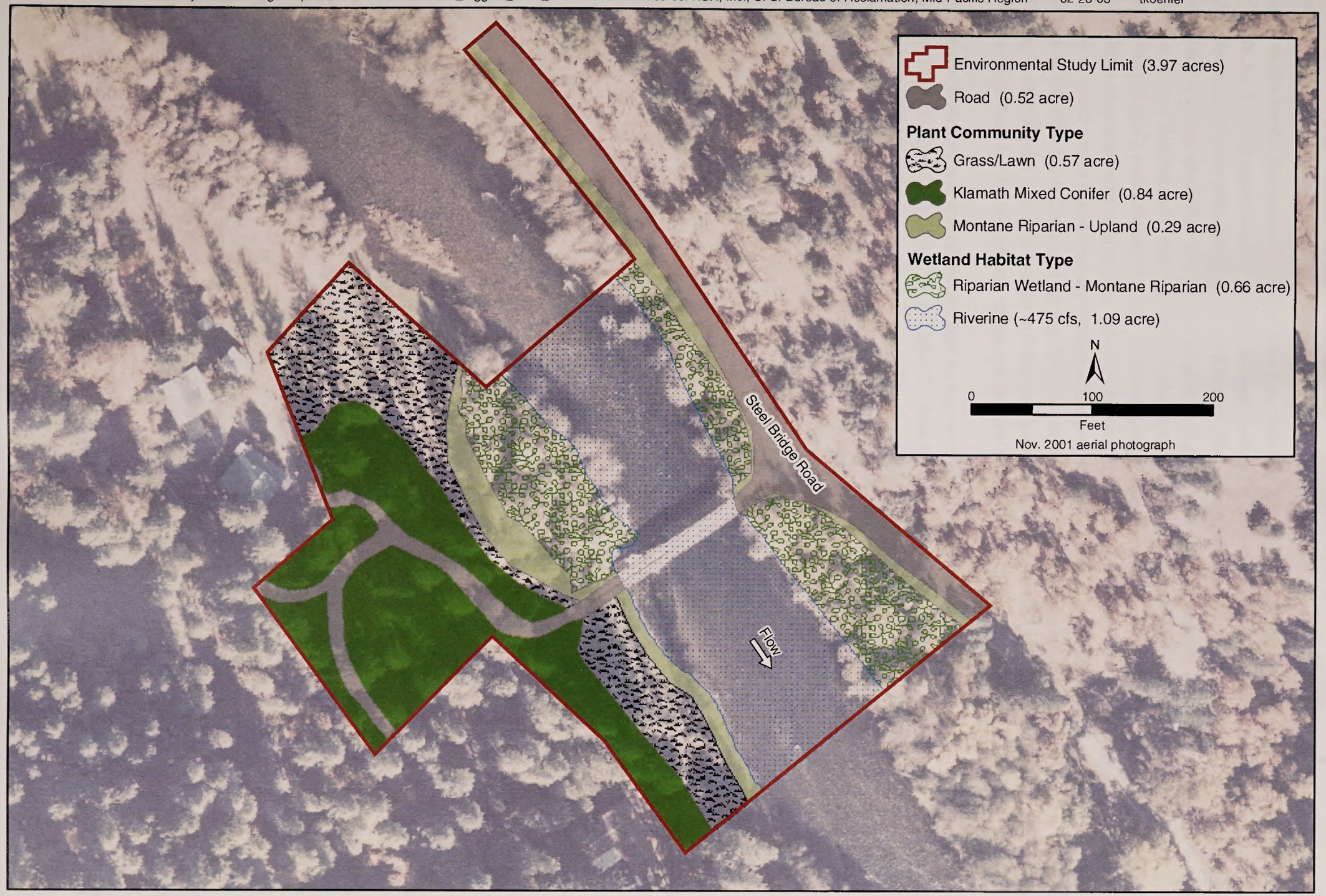


North State Resources, Inc.

Trinity River Bridges Project

Figure 3.7-1d
Biggers Road Plant Communities
Feb. 28, 2003

study limits for the four potential project sites (i.e., Salt Flat, Bucktail, Poker Bar, and Biggers Road bridges) (**Table 3.7-1**). The results of the CNDDB database search for the *Rush Creek Lakes, Trinity Dam, Papoose Creek, Junction City, Weaverville, Lewiston, French Gulch, Hoosimbim Mountain,* and *Bully Choop Mountain* quadrangles indicate that seven special-species plants, English peak greenbriar (*Smilax jamesii*), Nile's harmonia (*Harmonia doris-nilesiae*), Heckner's lewisia (*Lewisia cotyledon* var. *heckneri*), thread-leaved beardtongue (*Penstemon filiformis*), Regel's rush (*Juncus regelii*), bottlebrush sedge (*Carex hystericina*) and Dudley's rush (*Juncus dudleyi*) have been observed within a five-mile radius of the project site (**Figure 3.7-2**). Two of these special-status plants are known to occur within approximately 3 miles of the project study limits of Salt Flat. Bottlebrush sedge (CNPS List 2) is known from the Rush Creek and Spring Gulch areas, where it occurs in wet meadow habitat (SSW of Tylers Peak). Dudley's rush (CNPS List 2) is known to occur along a non-specified stream in Weaverville. The only reports of these occurrences for the bottlebrush sedge and Dudley's rush were in 1914 and 1879, respectively.

A floristic inventory and special-status plant survey were conducted within the project study areas for each of the four project sites on April 8, April 9, May 24, May 25, June 28 and July 1, 2002, by North State Resources, Inc. (NSR). These botanical studies were conducted according to guidelines developed by the CDFG (2000). Ground surveys were conducted at the appropriate season when special-status plant species were most likely to be identifiable (i.e., blooming period). A comprehensive list of observed plant species at each site are included in **Appendix M**. No special-status plant species were detected within the project ESL at any of the four bridge sites.

Survey and Manage Species

Joe Molter, botanist for the BLM, surveyed selected sites involving Federal lands associated with the Salt Flat and Bucktail sites for vascular plant species included in the Survey and Manage Standards of the Northwest Forest Plan. A list of vascular plant species with potential to occur on the proposed project sites was compiled by performing an Interagency Species Management System (ISMS) Database search and reviewing the Survey Protocols for the species listed on Table 1-1 of the amended ROD of the Northwest Forest Plan (USFS and BLM 2001) and the revisions for the 2001 Survey and Manage Annual Species Review (USFS and BLM 2002). This list included two potential species: clustered lady's slipper (*Cypripedium fasciculatum*) and mountain lady's slipper (*Cypripedium montanum*). Of the four proposed bridge sites, two (Poker Bar and Biggers Road) have no Federal lands within their ESLs. Surveys on the remaining two sites were conducted on May 28 and 31, 2002. No suitable habitat for the two species was present in the project ESLs (Salt Flat and Bucktail), and neither species was found during the botanical surveys.

Jeanne McFarland, botanist for BLM's Arcata Field Office, conducted pre-disturbance surveys at Salt Flat and Bucktail for nonvascular plants and fungi, collectively known as cryptograms, in compliance with the Northwest Forest Plan. Surveys, which were conducted during the summer of 2002, consisted of a close inspection of all suitable substrates for the fungus *Bridgeoporus nobilissimus* (the only pre-disturbance Survey and Manage fungus). No Survey and Manage cryptogamic species were present in the project ESLs (Salt Flat and Bucktail), and no appropriate habitat for these species was identified within the designated ESLs on public lands.

BLM Sensitive

Plant species that are BLM Sensitive are *not* on federal or state lists as endangered, threatened, candidate, or proposed, but are designated by the BLM State Director for special management consideration. The BLM Manual §6840 defines sensitive species as "...those species that are (1) under status review by the USFWS/NMFS; or

(2) whose numbers are declining so rapidly that Federal listing my become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats." Existing California-BLM policy concerning the designation of sensitive species identifies two conditions that must be met before a species may be considered as BLM sensitive: (1) a significant population of the species must occur on BLM-administered lands, and (2) the potential must exist for improvement of the species' condition through BLM management. The "Sensitive Species" designation is not meant to include federally listed species, proposed species, candidate species or state listed species. The BLM's policy provides sensitive species with the same level of protection afforded federal candidate species. Three BLM sensitive species with potential to occur within the Trinity River Bridges Project study area were identified: Shasta chaenactis (*Chaenactis suffrutescens*), Scott Mountain bedstraw (*Galium serpenticum* ssp. *scotticum*), and Stebbins' harmonia (*Harmonia stebbinsii*).

TABLE 3.7-1
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR WITHIN THE TRINITY RIVER BRIDGES PROJECT STUDY AREA

Common Name (*Scientific Name*)	Status FED/ST/ CNPS/BLM	General Habitat	Flowering Period	Comments
McDonald's rock cress (*Arabis macdonaldiana*)	E/E/1B/--	Crevices, cracks, and margins of rocks on barren to shrub-covered shallow, rocky, ultramafic soils (3900-7200').	May-July	Habitat within the project study area is too low in elevation for this species. **This species was not detected within the Project ESLs.**
Bottlebrush sedge (*Carex hystericina*)	--/--/2/--	Marshes, swamps, and in wet places along streambanks (1960–2000')	June	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Flaccid sedge (*Carex leptalea*)	--/--/2/--	Marshes, swamps, wet meadows, bogs, fens, and in wet places along streambanks (0–2300')	May-July	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Fox sedge (*Carex vulpinoidea*)	--/--/2/--	Freshwater marshes, swamps, and riparian woodlands (100-4000').	May-June	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Shasta chaenactis (*Chaenactis suffrutescens*)	--/--/1B/S	Rocky open slopes, cobbly river terraces, and occasionally on road cuts, on serpentine soils or glacial till.	May-September	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Northern clarkia (*Clarkia borealis ssp. borealis*)	--/--/1B/--	Chaparral, cistmontane woodland, and lower montane coniferous forests.	June-September	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Clustered lady's-slipper (*Cypripedium fasciculatum*)	SC/--/4/--	Coniferous forest habitat on serpentinite seeps and streambanks; a Survey and Manage species (BLM).	March-July	Suitable habitat *does not* exist within the project study area. **This species was not detected within the Project ESLs.**
Mountain lady's-slipper (*Cypripedium montanum*)	--/--/4/--	Cismontane woodland and broad-leafed upland and montane coniferous forest habitat; a Survey and Manage species (BLM).	March-August	Suitable habitat *does not* exist within the project study area. **This species was not detected within the Project ESLs.**
Oregon fireweed (*Epilobium oreganum*)	SC/--/1B/--	Wet, gently sloping meadows, bogs, pond margins, and banks of slow-moving streams, in full sun to part shade.	June-September	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**

TABLE 3.7-1
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR WITHIN THE TRINITY RIVER BRIDGES PROJECT STUDY AREA

Common Name (*Scientific Name*)	Status FED/ST/ CNPS/BLM	General Habitat	Flowering Period	Comments
Scott Mountains fawn lily (*Erythronium citrinum* var. *roderickii*)	--/--/1B/--	Montane forests on soils derived from serpentine or granitic parent material.	March-April	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Scott Mountain bedstraw (*Galium serpenticum* ssp. *scotticum*)	--/--/1B/S	Steep serpentine talus slopes in lower montane coniferous forest.	June-July	Suitable habitat *does not* exist within the project study area. **This species was not detected within the Project ESLs.**
Nile's harmonia (*Harmonia doris-nilesiae*)	--/--/1B/--	Dry, stony serpentine openings in mixed-conifer-oak forest on ridgetops and moderate to steep slopes	May-July	Suitable habitat *does not* exist within the project study area. **This species was not detected within the Project ESLs.**
Stebbins' harmonia (*Harmonia stebbinsii*)	SC/--/1B/S	Shallow, rocky, ultramafic substrates; edges between timber and brush, roadsides on gently south-facing slopes.	May-July	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Pickering's ivesia (*Ivesia pickeringii*)	SC/--/1B/--	Lower montane conifer forests; seasonally wet meadows, swales, and rocky ephemeral stream beds on ultramafic soils.	June-August	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Dudley's rush (*Juncus dudleyi*)	--/--/2/--	Wetlands or other wet areas in lower montane coniferous forest habitat (1490-6560')	July-August	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Regel's rush (*Juncus regelii*)	--/--/2/--	Meadows and wet places in upper montane coniferous forest habitat	August	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Heckner's lewisia (*Lewisia cotyledon* var. *heckneri*)	SC/--/1B/--	Outcrops and cliffs of various rock types, often near streams or rivers, in part to full shade, usually on northern aspects. Occurs in a variety of forest types.	May to July	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Howell's lewisia (*Lewisia cotyledon* var. *howellii*)	SC/--/3/--	Rocky places in broadleaf upland and lower montane coniferous forests, chaparral, and cismontane woodland.	April to July	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Howell's montia (*Montia howellii*)	--/--/2/--	Early-successional, vernally moist habitats, often on compacted fine sediments.	March-May	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Wolf's evening primrose (*Oenothera wolfii*)	--/--/1B/--	Coastal habitats and lower montane coniferous forests; usually on sandy, mesic substrates.	May to October	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Thread-leaved beardtongue (*Penstemon filiformis*)	SLC/--/1B/-	Rocky openings in lower montane woodlands and coniferous forests on ultramafic substrates	June-July	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
White beaked-rush (*Rhynchospora alba*)	--/--/2/--	Bogs, fens, meadows, marshes, and swamps (freshwater).	July-August	Suitable habitat *does not* exist within the project study area. **This species was not detected within the Project ESLs.**

TABLE 3.7-1
SPECIAL-STATUS PLANT SPECIES WITH POTENTIAL TO OCCUR WITHIN THE TRINITY RIVER BRIDGES PROJECT STUDY AREA

Common Name (*Scientific Name*)	Status FED/ST/ CNPS/BLM	General Habitat	Flowering Period	Comments
Brownish beaked-rush (*Rhynchospora capitellata*)	--/--/2/--	Meadows, marshes, swamps; moist areas in montane coniferous forest.	July-August	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Canyon Creek stonecrop (*Sedum paradisum*)	SC/--/1B/--	Chaparral, broad-leafed upland and coniferous forests; granitic, rocky substrate.	May to July	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**
Red Mountain catchfly (*Silene campanulata* ssp. *campanulata*)	--/E/4/--	Chaparral and lower montane coniferous forest; usually on rocky serpentinite.	April-July	Suitable habitat *does not* exist within the project study area. **This species was not detected within the Project ESLs.**
English peak greenbriar (*Smilax jamesii*)	--/--/1B/--	Lakesides, streambanks, alder thickets, bracken fern slopes, and moist slopes in montane forests (4000-8000')	May-July	Habitat within the project study area is too low in elevation for this species. **This species was not detected within the Project ESLs.**
Salmon Mountains wakerobin (*Trillium ovatum* ssp. *oettingeri*)	SLC/--/4/--	Moist areas in montane coniferous forest and riparian scrub habitat.	February-July	Suitable habitat exists within the project study area. **This species was not detected within the Project ESLs.**

Notes:
FED = Federal
CNPS = California Native Plant Society
ST = State of California
BLM = U.S. Bureau of Land Management

Federal & State Codes:
E = Endangered; T = Threatened;
SC = Species of Concern
SLC = Species of Local Concern
S = BLM Sensitive

CNPS Codes:
List 1B = Rare, Threatened or Endangered in CA and elsewhere
List 2 = Rare, Threatened, or Endangered in CA but common elsewhere
List 3 = More information is needed
List 4 = Limited distribution

Local Setting

No special status species were observed at any of the four proposed bridge sites during the April 8, April 9, May 24, May 25, June 28 and July 1, 2002 botanical surveys.

Wildlife

Regional Setting

Many wildlife species that inhabited river and riparian habitats prior to dam construction still occur along the Trinity River, although species that prefer early-successional stages or require greater riverine structural diversity likely occurred in greater abundance prior to the dam. Common species prior to dam construction likely included rough-skinned newt (*Taricha granulosa*), western aquatic garter snake (*Thamnophis couchi*), foothill yellow-legged frog (*Rana boylii*), western pond turtle (*Clemmys marmorata*), and American dipper (*Cinclus mexicanus*). Wildlife species that foraged on the abundant salmon and steelhead runs (e.g., black bear *Ursus americanus*, bald eagle *Haliaeetus leucocephalus*, and other scavengers) were also common along the pre-dam Trinity (USFWS et al. 2000a). The current flow regime has established conditions favoring upland habitat at the expense of wetland and aquatic habitat. The shift in habitat types is a causative factor in the current depressed populations of aquatic, semi-aquatic, and wetland wildlife species compared to terrestrial species. Species such as the northwestern pond turtle (*Clemmys*

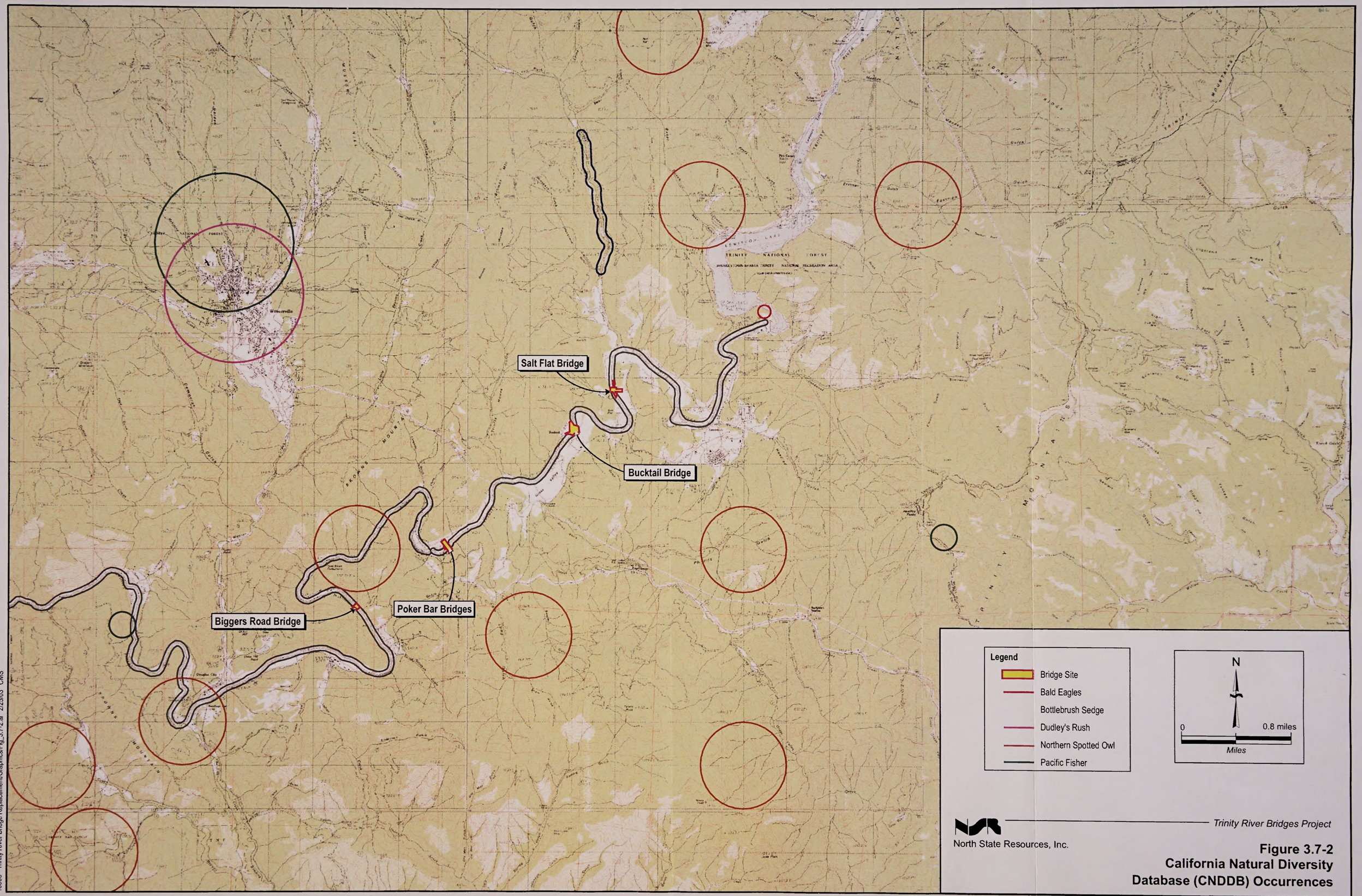


Figure 3.7-2
California Natural Diversity Database (CNDDB) Occurrences

10006 - Trinity River Bridge Replacement/Graphics/Fig_3.7-2.ai 2/25/03 CMS

marmorata marmorata), an example of a semi-aquatic species, have declined since completion of the dams in response to diminishing instream habitat. In contrast, species that favor mature, late-successional riparian habitats, such as the northern goshawk (*Accipiter gentiles*) and black salamander (*Aneides flavipunctatus*), prefer the current mature conditions (USFWS et al. 2000a).

Impounded water in reservoirs attracts resting and foraging waterfowl and other species that favor standing or slow-moving water. Reservoirs also provide important foraging habitat for eagles and other raptors that prey on fish and waterfowl.

Local Habitat Types

Table 3.7-2 includes a crosswalk of each wildlife habitat type (as defined in *A Guide to Wildlife Habitats of California* [Mayer and Laudenslayer 1988]) and corresponding plant communities observed within the Project ESLs. The table also includes a list of wildlife species commonly associated with each wildlife habitat type.

Special-Status Wildlife Species

For the purposes of this evaluation, listed wildlife species include taxa that are (1) designated as threatened or endangered by the state or federal governments (i.e., "listed species"); or (2) are proposed or petitioned for federal threatened or endangered status; and/or (3) are state or federal candidates for threatened or endangered status. "Other" special-status wildlife species are identified by the USFWS as Species of Concern and/or are identified by the CDFG as Species of Special Concern and/or California Fully Protected Species.

TABLE 3.7-2
WILDLIFE HABITATS AND ASSOCIATED SPECIES FOR THE TRINITY RIVER BRIDGES PROJECT

Habitat Type	Corresponding Plant Community	Associated Wildlife Species	Project Locations
Klamath Mixed Conifer	Klamath Mixed Conifer	Mountain quail (*Oreortyx pictus*) Sharp-shinned hawk (*Accipiter striatus*) Cooper's hawk (*Accipiter cooperii*) Long-eared owl (*Asio otus*) Western red bat (*Lasiurus blossevillii*) Western gray squirrel (*Sciurus griseus*) Virginia opossum (*Didelphis virginiana*) Gray fox (*Urocyon cinereoargenteus*) Black bear (*Ursus americanus*)	Biggers Road
Montane Hardwood-Conifer	Montane Hardwood-Conifer	Ensatina (*Ensatina escholtzi*) Sharp-shinned hawk Mountain quail California quail (*Callipepla californica*) Mourning dove (*Zenaida macroura*) Western scrub-jay (*Aphelocoma californica*) Virginia opossum Vagrant shrew (*Sorex vagrans*) Black-tailed jackrabbit (*Lepus californicus*) Gray fox	Salt Flat Bucktail Poker Bar

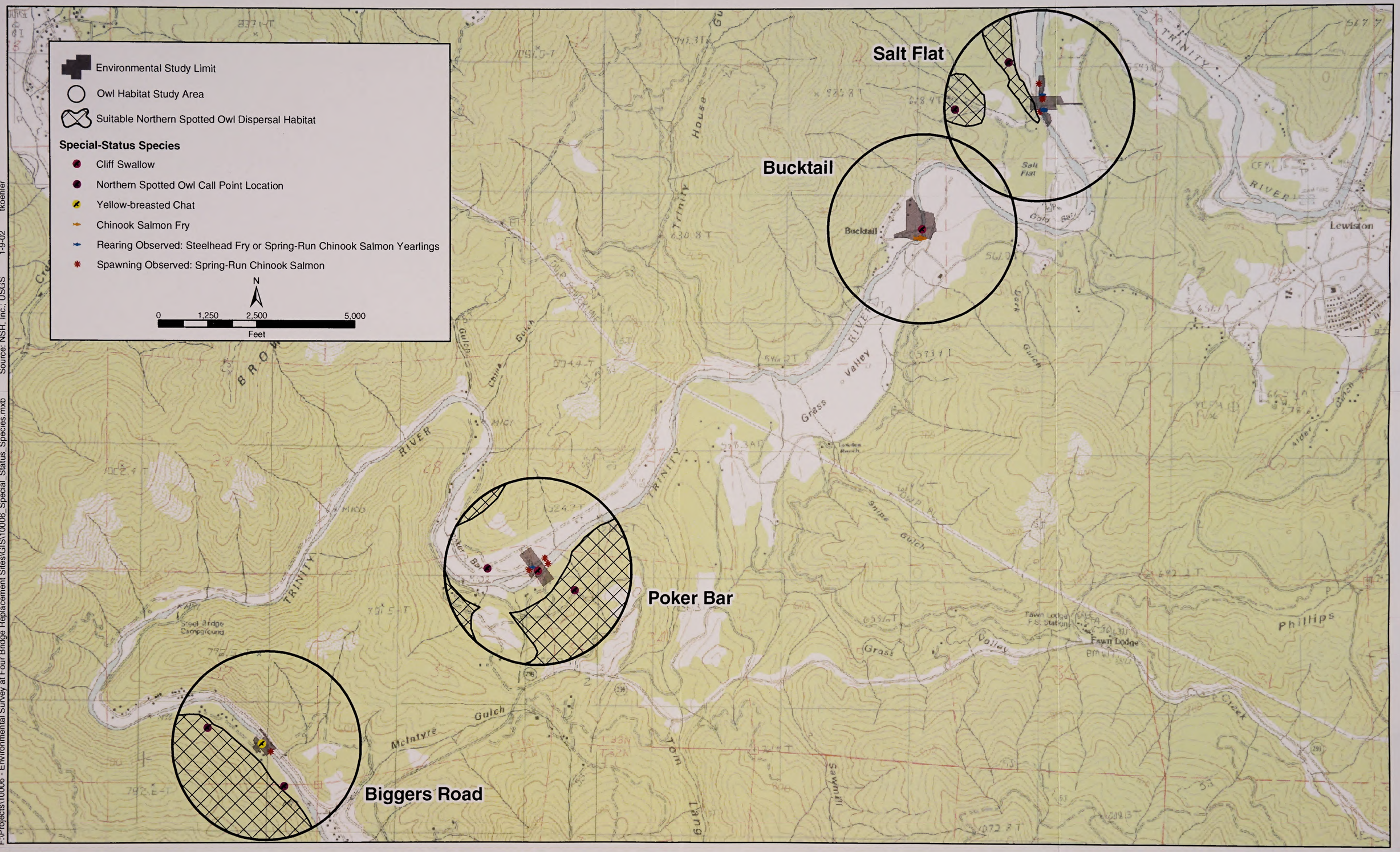
TABLE 3.7-2
WILDLIFE HABITATS AND ASSOCIATED SPECIES FOR THE TRINITY RIVER BRIDGES PROJECT

Habitat Type	Corresponding Plant Community	Associated Wildlife Species	Project Locations
Montane Riparian	Montane Riparian Riparian Wet Meadow Riparian Wetland	Western skink (*Eumeces skiltonianus*) Rubber boa (*Charina bottae*) Northern flicker (*Colaptes auratus*) Common yellowthroat (*Geothlypis trichas*) Song sparrow (*Melospiza melodia*) Vagrant shrew Beaver (*Castor canadensis*) Raccoon (*Procyon lotor*) Striped skunk (*Mephitis mephitis*)	All Sites
Fresh Emergent Wetland	Seasonal Wet Meadow Fresh Emergent Wetland	Black salamander (*Aneides flavipunctatus*) Western toad (*Bufo boreas*) Pacific chorus frog (*Pseudacris regilla*) Rubber boa Striped racer (*Coluber constrictor*) Western aquatic garter snake (*Thamnophis couchi*) Black phoebe (*Sayornis nigricans*) Water shrew (*Sorex palustris*) Shrew-mole (*Neurotrichus gibbsii*) Raccoon	Bucktail Salt Flat
Riverine	Riverine	Bullfrog (*Rana catesbeiana*) Western pond turtle (*Clemmys marmorata*) Mallard (*Anas platyrynchos*) Great blue heron (*Ardea herodias*) Osprey (*Pandion haliaetus*) Belted kingfisher (*Ceryle alcyon*) Beaver River otter (*Lutra canadensis*)	All Sites

A list of special-status wildlife species considered for analysis in this environmental document was compiled by performing a CNDDB database search, informal consultations with the CDFG and USFWS (**Appendix L**), and reviewing biological literature for the project region (**Table 3.7-3**). Habitat information for the special-status wildlife species was excerpted from:

- Amphibian and Reptile Species of Special Concern in California (Jennings and Hayes 1994)
- California's Wildlife, Volume II, Birds (Zeiner et al. 1990a)
- California's Wildlife, Volume III, Mammals (Zeiner et al. 1990b)

Federal and state status designations and general habitat requirements for each species are provided in the table. A comments section provides information on whether suitable habitat exists within the project study limits for each facility location. Conclusions presented in this table are based on the knowledge of local professional biologists and historic survey information. **Figure 3.7-2** presents the known locations of special-status wildlife locations within five miles of the project study area, as identified in the CNDDB. Special-status species observed within the Project ESLs are mapped in **Figure 3.7-3**.



F:\Projects\10006 - Environmental Survey at Four Bridge Replacement Sites\GIS\10006_Special_Status_Species.mxb Source: NSR, Inc.; USGS 1-9-02 tkoehler

North State Resources, Inc.

Trinity River Bridges Project

Figure 3.7-3
Special-Status Species

Survey and Manage Species

BLM biologists surveyed selected sites involving Federal lands for wildlife species included in the Survey and Manage Standards of the Northwest Forest Plan. A list of wildlife species with potential to occur on the proposed project sites was compiled by performing an ISMS Database search and reviewing the Survey Protocols for the species listed on Table 1-1 of the amended ROD of the Northwest Forest Plan (USFS and BLM 2001) and the revisions for the 2001 Survey and Management Annual Species Review (USFS and BLM 2002). Of the four proposed bridge replacement sites, two (Poker Bar and Biggers Road) have no Federal lands within their ESLs. Pre-disturbance surveys for mollusks were conducted on the remaining two sites (Bucktail and Salt Flat) on April 26, 2001 and November 20, 2002. No mollusks were located during either visit. Much of the defined ESL boundary was underwater (and unsuitable for mollusk habitat) during May 2002 high Trinity River flows. The Bucktail Bridge ESL was determined to be unsuitable for mollusk habitat.

BLM Sensitive

The BLM Manual §6840 defines sensitive species as "...those species that are (1) under status review by the USFWS/NMFS; or (2) whose numbers are declining so rapidly that Federal listing my become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats." Existing California-BLM policy concerning the designation of sensitive species identifies two conditions that must be met before a species may be considered as BLM sensitive: (1) a significant population of the species must occur on BLM-administered lands, and (2) the potential must exist for improvement of the species' condition through BLM management (CDFG 2002c). The "Sensitive Species" designation is not meant to include federally listed species, proposed species, candidate species, or state listed species. The BLM's policy provides sensitive species with the same level of protection given to federal candidate species. Ten of the wildlife species with potential to occur within the Trinity River Bridges Project study limits are designated BLM Sensitive species.

TABLE 3.7-3
SPECIAL-STATUS WILDLIFE SPECIES CONSIDERED FOR ANALYSIS, TRINITY RIVER BRIDGES PROJECT

Common Name Scientific Name	Status FED / ST / BLM	General Habitat	Comments
Amphibians			
Foothill yellow-legged frog *(Rana boylii)*	SC/SSC/S	Cool, fast-moving streams and rivers with rocky substrate in chaparral, forests, and woodlands.	The Project ESL at **all four bridge sites** provides suitable habitat for, and is within the known range of the species. **This species was not detected within the Project ESLs.**
Reptiles			
Northwestern pond turtle *(Clemmys marmorata marmorata)*	SC/SSC/S	Rivers and streams with slow-moving water or pools and some canopy cover. Require basking sites such as partially submerged logs, rocks, or exposed mud banks.	The Project ESL at **all four bridge sites** provides suitable habitat for the species. **This species was not detected within the Project ESLs.**

TABLE 3.7-3
SPECIAL-STATUS WILDLIFE SPECIES CONSIDERED FOR ANALYSIS, TRINITY RIVER BRIDGES PROJECT

Common Name Scientific Name	Status FED / ST / BLM	General Habitat	Comments
Birds			
Cooper's hawk *(Accipter cooperi)*	--/SSC/--	Nests in riparian areas and oak and conifer woodlands; forages at woodland edges.	The Project ESL at **all four bridge sites** provides suitable nesting and foraging habitat for the species. **This species was not detected within the Project ESLs.**
Northern goshawk (*Accipiter gentiles*)	SC/SSC/--	Rare permanent resident and confirmed breeder in Trinity County. Hunts birds and small mammals in flight. Typically nests in north-facing conifer forests near water.	The Project ESL provides suitable foraging habitat for the species at **all bridge sites**. Suitable nesting habitat occurs within ¼ mile of the Project ESL at the **Biggers Road and Salt Flat bridge sites.** **This species was not detected within the Project ESLs.**
Sharp-shinned hawk *(Accipter striatus)*	--/SSC/--	Nests in riparian areas and oak and conifer woodlands; forages at woodland edges.	The Project ESL provides suitable nesting and foraging habitat for the species at **all four bridge sites.** **This species was not detected within the Project ESLs.**
Golden eagle *(Aquila chrysaetos)*	--/SSC/S CFP	Rare permanent resident in Trinity County. Nests on cliffs and tall trees on hillsides; forages over open grasslands or early successional stage vegetation. Suitable foraging habitat occurs on the gravel bars and open areas along the river.	The open grassy or young seral stage vegetation on river bars near the **Poker Bar, Bucktail, and Salt Flat bridge sites** provides suitable foraging habitat. Suitable nesting habitat does not occur within the Project ESL. **This species was not detected within the Project ESLs.**
Yellow-billed cuckoo (*Coccyzus americanus*)	C/E/--	Obligate riparian nesters; only breed in streamside forests, especially those dominated by mature willow and cottonwood stands. Most nesting occurs within relatively large patches of riparian forest, usually 25 to 100 acres in extent.	Not known to occur in Trinity County. **Biggers Road** and **Salt Flat** bridge sites support suitable mature riparian habitat, but the **Project ESL is outside of the current known range of the species.**
Yellow warbler *(Dendroica petechia)*	--/SSC/--	Nests and forages in dense riparian scrub habitat.	Montane riparian (upland) habitat within the Project ESL **at all four bridge sites** provides suitable nesting and foraging habitat for the species. **This species was not detected within the Project ESLs.**
Little willow flycatcher *(Empidonax traillii brewsteri)*	SC/E/--	Rare summer resident in wet meadow and montane riparian habitats at 2,000 to 8,000 ft elevation.	Montane riparian habitat within the Project ESL **at all four bridge sites** provides suitable nesting and foraging habitat for the species. **This species was not detected within the Project ESLs.**
American peregrine falcon *(Falco peregrinis anatum)*	D/E/-- CFP	Rare permanent resident and confirmed breeder in Trinity County. Forages over marshes and grasslands on flying birds up to duck size. Nesting habitat includes high, protected cliffs and ledges near water. May forage 5 km or more from nesting area.	The Project ESL provides suitable foraging habitat **at all four bridge sites**. No suitable nesting habitat present. **This species was not detected within the Project ESLs.**

TABLE 3.7-3
SPECIAL-STATUS WILDLIFE SPECIES CONSIDERED FOR ANALYSIS, TRINITY RIVER BRIDGES PROJECT

Common Name Scientific Name	Status FED / ST / BLM	General Habitat	Comments
Birds, con't			
Bald eagle *(Haliaeetus leucocephalus)*	T/E/--	Forages on live and dead fish and nests in large trees or snags. Requires large bodies of water including ocean shorelines, lake margins, and large, open river courses for foraging, nesting and wintering habitat.	The Project ESL **at all four bridge sites** provides suitable foraging habitat for the species. Suitable nesting habitat does not occur within the Project ESL. **This species was not detected within the Project ESLs.**
Yellow-breasted chat *(Icteria virens)*	-/SSC/--	Nests and forages in dense riparian habitat with mature riparian tree species (e.g., willow, cottonwood).	Species observed at **Salt Flat** and **Biggers Road** sites on May 15, 2002. Suitable habitat (i.e. montane riparian) present within the project study area at **all four bridge sites.**
Osprey *(Pandion haliaetus)*	--/SSC/--	Utilizes similar habitat as the bald eagle, often competing for foraging and nesting resources. Forages on live and dead fish and nests in large trees or snags. Requires large bodies of water including ocean shorelines, lake margins, and large, open river courses for foraging, nesting and wintering habitat.	The Project ESL provides suitable foraging habitat but no nesting habitat for the species at **all four bridge sites.** **This species was not detected within the Project ESLs.**
Bank swallow *(Riparia riparia)*	SC/T/--	Colony nester restricted to isolated places where fine-textured or sandy, vertical bluffs or riverbanks are available in which to dig nesting cavities.	The Project ESL provides marginal habitat for the species at the **Bucktail** bridge site only. Species is considered extremely rare in Trinity County. **No bank swallows were observed during 2002 field surveys.**
Northern spotted owl *(Strix occidentalis caurina)* Critical Habitat	T/--/--	Prefers multiple-story canopy dominated by big trees with cavities or broken tops; frequently in mixed conifer habitats. Most often in old-growth or mixed old-growth and mature trees.	The project study area does not provide suitable nesting, roosting or foraging habitat. The **Biggers Road, Poker Bar, and Salt Flat** sites provide suitable dispersal habitat for this species; the Bucktail site does not. **This species was not detected within ¼ mile** of the Biggers Road, Poker Bar, and Salt Flat sites during protocol level surveys conducted in May-July 2002.
Mammals			
Pale Townsend's big-eared bat *(Corynorhinus townsendii pallescens)*	SC/SSC/S	Uncommon, but occurs through out California in all but alpine habitats. Most abundant in mesic habitats. Hibernation sites are usually cold but not below freezing; maternity sites are warm and can occur in caves, tunnels, mines, and buildings. Highly susceptible to nest abandonment due to human disturbance.	Suitable roosting and foraging habitat occurs within the ESL at **all four bridge sites.** **This species was not detected within the Project ESLs.**

TABLE 3.7-3
SPECIAL-STATUS WILDLIFE SPECIES CONSIDERED FOR ANALYSIS, TRINITY RIVER BRIDGES PROJECT

Common Name Scientific Name	Status FED / ST / BLM	General Habitat	Comments
Mammals, con't			
California wolverine *(Gulo gulo luteus)*	SC/T/-- CFP	A scarce resident of North Coast Mountains in Trinity County, typically at elevations above 1600 feet. Den in caves, cliffs, hollow logs, cavities in the ground, under rocks; may dig dens in snow, or use old beaver lodges (Thomas 1979). Forage in open to sparse tree habitats on ground, in trees, burrows, among rocks, in or under snow, and sometimes in shallow water.	Denning would not likely occur within the Project ESL due to the moderate number of human residences. Wolverine may on rare occasions utilize the Trinity River as a travel corridor at **all four bridge sites.** **This species was not detected within the Project ESLs.**
American marten (*Martes americana*)	SC/--/--	Dens and forages in old-growth forests or mixed stands of old-growth and mature trees. May use riparian corridors for movement.	Small patches of suitable denning habitat are present within ¼ mile of the **Biggers Road, Poker Bar, and Salt Flat** sites. This species may use the Trinity River as a travel corridor at **all four bridge sites.** **This species was not detected within the Project ESLs.**
Pacific fisher (*Martes pennanti*)	SC/SSC/S	Dens and forages in old-growth forests or mixed stands of old-growth and mature trees. May use riparian corridors for movement.	CNDDB reports fisher sightings (from 1997) within the Weaverville Quad, 5 miles of the project site. Small patches of suitable denning habitat are present within ¼ mile of the **Biggers Road, Poker Bar, and Salt Flat** sites. This species may use the Trinity River as a travel corridor at **all four bridge sites.** **This species was not detected within the Project ESLs.**
Small-footed myotis bat *(Myotis ciliolabrum)*	SC/--/S	Occurs in a wide variety of habitats, primarily in relatively arid wooded and brushy uplands near water from sea level to 8900 feet. Forages in arid upland grasslands, open woodlands, and over water. Roosts in caves, mines, buildings, bridges, rock crevices, and under tree bark.	The project area supports potentially suitable roosting and foraging habitat at **all four bridge sites.** **This species was not detected within the Project ESLs.**
Long-eared myotis bat *(Myotis evotis)*	SC/--/S	The Long-eared myotis is uncommon but widespread in California. Has been found in most habitats, but prefers coniferous woodlands. Roosts singularly in buildings, crevices, spaces under bark, and in snags. Forages among trees, over brush, usually in close association with water.	The project area supports potentially suitable roosting and foraging habitat at **all four bridge sites.** **This species was not detected within the Project ESLs.**

TABLE 3.7-3
SPECIAL-STATUS WILDLIFE SPECIES CONSIDERED FOR ANALYSIS, TRINITY RIVER BRIDGES PROJECT

Common Name Scientific Name	Status FED / ST / BLM	General Habitat	Comments
Mammals, con't			
Fringed myotis bat *(Myotis thysanodes)*	SC/--/S	Mesic habitats, roosting in caves, mines, tunnels, and buildings. Maternity roosts can have 200 individuals. Roosts typically in valley foothill hardwood and hardwood-conifer habitats from 4000 - 7000 feet, but forages in open, early successional stage habitats near water.	While the fringed myotis bat tends to occur in higher elevation sites, suitable roosting and foraging habitat occurs within the ESL at **all four bridge sites.** **This species was not detected within the Project ESLs.**
Long-legged myotis bat (*Myotis volans*)	SC/--/S	Occurs throughout the Coast Range from Oregon to Mexico and in most of the Sierras, but is absent from the arid Central Valley. Most common in woodland and forest habitat above 4000 feet. Roosts in rock crevices, buildings, under tree bark, in snags, mines and caves. Trees are the most important day roosts.	The project area supports potentially suitable roosting and foraging habitat at **all four bridge sites.** **This species was not detected within the Project ESLs.**
Yuma myotis bat *(Myotis yumanensis)*	SC/--/S	Forages over water such as ponds, streams, stock tanks in open woodlands. Roosts in buildings, caves, mines, abandoned swallow nests, bridges, and rock crevices. Common and widespread in California.	The project area supports potentially suitable roosting and foraging habitat at **all four bridge sites.** **This species was not detected within the Project ESLs.**

Notes:
FED = Federal
ST = State
BLM = U.S. Bureau of Land Management

Status Codes:
E = Endangered
T = Threatened
C = Candidate
SC = Species of Concern
SSC = Species of Special Concern
D = Delisted (status to be monitored for 5 years)
S = Sensitive
CFP = California Fully Protected species

Twenty-three of the wildlife species listed in **Table 3.7-3** may occur in the vicinity of one or more of the proposed project sites based on available habitat and species distribution. These 23 species include: foothill yellow-legged frog, northwestern pond turtle, northern spotted owl (*Strix occidentalis caurina*), northern goshawk, bald eagle, golden eagle, American peregrine falcon, little willow flycatcher (*Empidonax traillii brewsteri*), yellow warbler (*Dendroica petechia*), yellow-breasted chat (*Icteria virens*), bank swallow (*Riparia riparia*), osprey (*Pandion haliaetus*), Cooper's hawk (*Accipter cooperi*), sharp-shinned hawk (*Accipiter striatus*), American marten (*Martes americana*), Pacific fisher (*Martes pennanti*), California wolverine (*Gulo gulo luteus*), and six special-status bat species. Species accounts for each of these species are provided below, including specific project site data.

Foothill Yellow-legged Frog

The foothill yellow-legged frog breeds in low-velocity, shallow water near sparsely vegetated gravel bars. These areas have been reduced by 95 percent compared to pre-dam conditions (Lind et al. 1996). Few frogs have been found in the 12 river miles below Lewiston Dam, probably because of the lack of breeding habitat. Escape habitat, in the form of nearby pools, has also been reduced by low flows, fine sediment accumulation, and riparian encroachment.

The natural recession in flows following peak snowmelt runoff is believed to be a cue for egg deposition for the foothill yellow-legged frog. Prior to dam construction, snowmelt flows peaked sometime in the spring and gradually tailed off towards summer. However, dam releases have not always included a spring recession, or the recession has been greatly weakened and/or out of sync with tributary flows, thereby negating an important breeding cue for this species. Release schedules that do not match the natural snowmelt recession may result in reduced reproductive success for the foothill yellow-legged frog. For example, a scheduled peak release may wash away eggs that were deposited in response to earlier tributary recessions. Conversely, a late snowmelt peak from the tributaries may harm eggs deposited because of the artificial recession of dam releases.

Suitable habitat for foothill yellow-legged frog is present at all four bridge sites, although the species was not observed during field surveys conducted in 2002.

Northwestern Pond Turtle

Northwestern pond turtle, a federal and state species of concern and BLM sensitive species, inhabits ponds, lakes, and slow moving streams. Although the western pond turtle still occupies some locations in the Trinity River, "the alterations of channel morphology and flow regimes associated with damming (have decreased the) habitat suitability" for the species (Reese and Welsh 1998). For example, instream pools used by turtles for cover and protection from predators have largely been lost because of channelization. This habitat has been replaced to some extent by undercut banks with slow-moving water. Areas that historically provided low water velocities during high flows (e.g., side channels and gravel bars) have also been reduced, resulting in increased mortality to hatchlings and juveniles. Furthermore, because current summer releases from the dam are colder than pre-dam conditions, development in early life stages could be affected, as well as behavior in all life stages. The harmful effects of the coldwater releases are compounded by a reduction in thermal stratification compared to pre-dam conditions, a consequence of the decreased structural diversity. In other words, the turtle (and many other species) no longer has the temperature choices it had in pre-dam conditions. Although the species was not observed during the 2002 field surveys, suitable habitat for northwestern pond turtle is present at all four bridge sites.

Northern Spotted Owl

Northern spotted owls prefer multiple-story, dense canopy dominated by large trees with cavities or broken tops for nesting, frequently in mixed conifer or hardwood-mixed conifer habitats. Foraging areas are commonly in similar habitat, often with lower density canopy cover, and smaller trees. Spotted owls are also known to forage along the edges of clear cuts or other natural openings. There are ten known occurrences of northern spotted owl within five miles of the project area (**Figure 3.7-2**).

Although suitable nesting, roosting, and foraging habitat is not located in the project study area, suitable dispersal habitat is located on the southwest side of Biggers Road Bridge, the west side of the Poker Bar Bridges, and in a small area on the west side of Salt Flat Bridge. Suitable habitat for northern spotted owl is not present at the Bucktail Bridge site. Protocol-level surveys for northern spotted owl were conducted at Biggers Road, Poker Bar, and Salt Flat (**Appendix N**). Two calling stations were established at each of these three bridge sites. Each station was visited six times on the following dates: May 15, May 23, June 6, June 17, June 25, and July 10, 2002. These surveys indicate that potentially suitable habitat in the project study area is not currently occupied by northern spotted owl.

Bald Eagle

Bald eagle nesting typically occurs in close proximity to a water source, and nearly always within one mile. Preferred nest trees are often the tallest and largest diameter trees in a stand, with large branches to support the nest. Bald eagles range throughout California; preferring quiet areas near water, they breed in mountain and foothill forests and woodlands near reservoirs, lakes, and rivers. Breeding territories are concentrated in northern California.

Bald eagles typically forage for fish and waterfowl in large water bodies, including lakes and streams. They also forage in uplands in search of birds, small mammals, or carrion.

The bald eagle has experienced a reduction in Trinity River forage because of the declining salmon escapements, a result of the construction and operation of Trinity and Lewiston Dams. However, the eagle adapts well to reservoirs where it forages on fish and waterfowl. Eight bald eagle pairs are known to exist in the areas surrounding Trinity and Lewiston Reservoirs. Reproductive success of eagles near Trinity and Lewiston Reservoirs has generally exceeded the recovery goal of one young per occupied nest (as established in the Pacific Region recovery plan: USFWS 1986). Bald eagle use of the reservoirs increases dramatically in some winters.

Suitable nesting habitat for the bald eagle is not present within the Project ESLs and no active nests were observed within 0.25 mile of any of the for project sites. However, suitable foraging habitat for the species is present at all four bridge locations. The species was not observed in the Project ESLs during field surveys conducted in 2002.

Little Willow Flycatcher

The little willow flycatcher, a state endangered species, is a summer resident in California, breeding in riparian willow thickets, often in association with wetlands. Typically there is a water source in close proximity to the nest; the aquatic component provides habitat for the variety of insects upon which willow flycatchers prey. The riparian willow habitat type preferred by this species is considered to be early-successional. In the Trinity River Basin this habitat type was more abundant in the pre-dam floodplain than it is currently. Approximately a dozen willow flycatchers were recorded annually in Trinity River surveys between 1990 and 1992; however, no breeding birds were detected (Wilson 1995). The lack of standing water and flying insects—a result of channelization of the river—was speculated to be a possible factor limiting willow flycatcher breeding. Surveys of the Trinity River have repeatedly detected birds at the site of a newly constructed side-channel rehabilitation project located. Montane riparian habitat within the Project ESL at all four bridge sites provides suitable habitat for nesting and foraging, although no little willow flycatchers were observed during the 2002 field surveys.

Yellow Warbler

Yellow warbler, a state species of concern, forages and nests along dense riparian habitat. Because of brood parasitism by brown-headed cowbirds and riparian habitat destruction, the yellow warbler is a California species of concern. Suitable nesting and foraging habitat for the species exists within the ESL at all four bridge sites, although there are no recorded nest sites identified by the CNDDB program within the vicinity of the project. No yellow warbler nests were observed within the Project ESL at any of the four project sites during the 2002 field surveys.

Yellow-breasted Chat

As with the yellow warbler, brood parasitism and riparian habitat destruction has led to a decline in the yellow-breasted chat population. The species is currently designated as a species of concern in California. The species requires dense riparian thickets of willows, vine tangles, and dense brush associated with streams, swampy ground, and margins of small ponds for foraging and nesting. Suitable habitat for the species exists within the Project ESL at all four bridge sites, and yellow-breasted chats were observed at the Salt Flat and Biggers Road sites during the May 15, 2002 survey.

American Peregrine Falcon

Peregrine falcons have been federally delisted, however, this species remains on the state endangered list, and is "fully protected" under state law by Fish and Game Code section 3511. Peregrine falcon eyries are typically selected on protected cliff ledges near streams or rivers. Preferred foraging areas include streams or rivers, marshes, and wetlands. No suitable nesting habitat is present in the Project ESL, or within 0.25 mile. Suitable foraging habitat is present at all four bridge sites. The species was not observed in the project study area during the 2002 field surveys.

Osprey

The osprey, a state species of concern and a species protected against "take" by California Fish and Game Code section 3505, forages over clear open waters such as rivers, lakes, and reservoirs. The species nest in large trees, snags, and dead-topped trees near bodies of water. No suitable nesting habitat is present within the Project ESLs. Suitable foraging habitat is present at all four bridge sites. The species was not observed in the project study area during the 2002 field surveys.

Cooper's Hawk

Cooper's hawks nest in riparian woodland associated with canyons and floodplains. Destruction of riparian woodlands by deforestation and flood-control systems throughout the state has resulted in this species being designated as a state species of concern. Suitable foraging and nesting habitat for this species exists within the Project ESL at all four bridge sites, but no recorded nest sites identified by the CNDDB program occur within the vicinity of the project. No Cooper's hawk nests were observed within the Project ESLs during the 2002 field surveys.

Sharp-Shinned Hawk

Sharp-shinned hawks prefer scattered coniferous, deciduous, or mixed woodlands for nesting sites. Destruction of woodlands by deforestation and development has resulted in the loss of habitat for the species. The species is currently designated as a species of concern by CDFG. Suitable foraging and nesting habitat for this species exists within the Project ESL at all four bridge sites, but no recorded nest sites identified by the CNDDB program occur

within the vicinity of the project. No sharp-shinned hawk nests were observed within the Project ESLs during the 2002 field surveys.

Bank Swallow

Bank swallows are neotropical migrants found primarily in riparian and other lowland habitats in California west of the deserts during the spring-fall period. In the summer, the species is restricted to riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine-textured or sandy soils, into which it digs nesting holes. Bank swallows feed predominantly over open riparian areas, but also over brushland, grassland, wetlands, water, and cropland. In migration, they flock with other swallows over many open habitats. The California range of this species is estimated to be reduced 50 percent since 1900. Today, only approximately 110-120 colonies remain within the state. Perhaps 75 percent of the current breeding population in California occurs along banks of the Sacramento and Feather rivers in the northern Central Valley. Other colonies persist along the central coast from Monterey to San Mateo counties, and northeastern California in Shasta, Siskiyou, Lassen, Plumas, and Modoc counties (Zeiner et al. 1990). The species is considered extremely rare in Trinity County. The Project ESL at Bucktail Bridge provides marginal habitat for bank swallows; however, no evidence of the species occurring at the site was observed. Suitable habitat for the species is not present at the remaining three bridge sites (Biggers Road, Poker Bar, Salt Flat). No bank swallows were observed during the 2002 field surveys.

Golden Eagle

The golden eagle is a "fully protected bird" pursuant to California Fish and Game Code section 3511. Preferred foraging habitat for the golden eagle includes chaparral, grasslands, and desert associations, as well as open-canopied, early-successional coniferous forests and woodlands. Prey species include jackrabbit and other small mammals, although carrion may be eaten when prey species are scarce. Secluded cliffs with overhanging ledges and large trees in open areas are used for nesting and cover (Zeiner et al. 1990). Alternative nest sites are maintained and old nests reused. The golden eagle is a permanent, year-round resident throughout most of California, with the exception of the Central Valley floor, where it is a winter migrant, and the high mountain portion of the Sierra Nevada, where it occurs as a summer resident only. The open, grassy or young seral stage vegetation on river bars at the Poker Bar, Bucktail, and Salt Flat bridge sites provides marginal foraging habitat for the species. Suitable nesting habitat does not occur in the Project ESL. The species was not observed during the field surveys conducted in 2002.

Northern Goshawk

Northern goshawks forage in wooded areas, using snags and dead-topped trees for observation of potential prey. The species typically nests in dense, mature conifer and deciduous forests on north slopes, in the densest part of stands but near openings. Nest sites tend to be located near a water source and riparian areas. Alternative nest sites are maintained and old nests reused. The Project ESL provides suitable foraging habitat for the species at all four bridge sites. Potential nesting habitat occurs within 0.25 mile of the Project ESL at the Biggers Road and Salt Flat bridge sites. The species was not observed during the field surveys conducted in 2002.

American Marten

Optimal habitats for the American marten are various mixed evergreen forests with more than 40 percent crown closure with large trees and snags, including red fir, lodgepole pine, subalpine conifer, mixed conifer, Jeffrey pine, and eastside pine forests. Small clearings, meadows, and riparian areas provide foraging habitats, particularly during

snow-free periods; the species forages along the edge of water, on ground, and in trees, snags, logs, and rock areas. The species utilizes cavities in large trees, snags, stumps, longs or burrows, caves, and crevices in rocky areas for denning cover. The American marten less commonly dens in woodpiles, cabins, and other human artifacts. The species has been known to den under snow near logs, stumps, or other objects. In the Project ESL, small patches of suitable denning habitat are present within 0.25 mile of the Biggers Road, Poker Bar, and Salt Flat bridge sites. The species may also use the Trinity River as a travel corridor at all four bridge locations.

Pacific Fisher

The Pacific fisher occurs in intermediate to large-tree stands of coniferous forests and deciduous-riparian habitats with a high percentage canopy closure (greater than 50 percent). Fishers den in protected cavities in large trees, snags, logs, rock areas, or shelters provided by slash or brush piles. The species forages on the ground and in trees. The CNDDB reports fisher sightings within the Weaverville quadrangle, approximately five miles from the Project ESL. Small patches of suitable denning habitat are present within 0.25 mile of the Biggers Road, Poker Bar, and Salt Flat bridge sites. The species may also use the Trinity River as a travel corridor at all four bridge locations.

California Wolverine

The California wolverine, a "fully protected mammal" under California law (Fish and Game Code, § 4700), is a scarce resident of the North Coast Mountains in Trinity County, typically occurring at elevations above 1600 feet. Individuals have been observed in mixed conifer, red fir, and lodgepole habitats, and may also use subalpine conifer, alpine dwarf-shrub, wet meadow, and montane riparian. The species prefers areas having little human disturbance. California wolverines den in caves, cliffs, hollow logs, cavities in the ground, and under rocks; they may dig dens in snow or use old beaver lodges (Thomas 1979). The species forages in open to sparse tree habitats on ground, in trees, burrows, among rocks, in or under snow, and sometimes in shallow water. Wolverines can travel great distances, and have very large home ranges. Wolverines may, on rare occasions, utilize the Trinity River as a travel corridor, but denning would not likely occur within the Project ESL due to the number of human residences and likelihood of disturbance.

Bat Species

Special-status bat species with potential to occur in the project area include pale Townsend's big-eared bat, small-footed myotis bat, long-eared myotis bat, fringed myotis bat, long-legged myotis, and Yuma myotis bat. These six species of bat roost in cool, dark crevices or shaded areas by day and forage for insects by night. All of these species are known to forage over dry grasslands, as well as creeks, ponds, and lakes. Suitable roosting sites include caves, cliff faces, mine adits, tunnels, bridges, trees, and abandoned buildings (Zeiner et al. 1990). Suitable roosting and foraging habitat for these species is present at all four bridge sites, although none of the species were detected in the Project ESLs during the 2002 field surveys.

Jurisdictional Wetlands

Regional Setting

Although information on pre-dam wetlands is sparse, it is likely that more wetlands existed than are currently present. Wetland acreage has probably declined following dam construction in part because reduced flows now inundate less of the floodplain. Fringe strands of freshwater emergent vegetation, scrub-shrub, and forested wetlands now occur

intermittently, where a wider belt of wetland likely existed under pre-dam conditions. Elimination of river meanders has also reduced post-dam wetland acreage by curtailing formation of oxbows and other meander-related features.

Local Setting

On July 16-18, 2002, July 23-24, 2002, and March 3, 2002, NSR wetland scientists conducted a delineation of jurisdictional waters of the U.S. within the study limits of the following project sites associated with the Trinity River Bridges Project: Salt Flat Bridge; Bucktail Bridge; Poker Bar Bridges; and Biggers Road Bridge. The delineation was conducted according to the methodology described in the 1987 Corps Wetland Delineation Manual. The method utilized a three-parameter approach (i.e., vegetation, soils, and hydrology) to identify and delineate the boundaries of jurisdictional wetlands. Jurisdictional wetland features were mapped on aerial photographs for each site (1 inch = 200 feet scale). The wetland delineation report is included as **Appendix H**.

All four of the bridge sites support riparian wetlands (montane riparian), which occur adjacent to the Trinity River. The hydrologic regime of the riparian wetlands is influenced by the Trinity River, although the wetland features do not always occur within the river's "normal high water mark." Due to fluctuations in the water levels from year to year, some of the riparian wetlands are under water for some parts of the year. In general, the boundary of the riparian wetlands was determined to be the area where hydrology indicators were no longer present. Hydric soil indicators and hydrophytic vegetation were evident throughout most of the area within the "study area" boundaries for each bridge site. Drift lines, water stained leaves, and drainage patterns in the wetlands were used to determine the precise boundaries of the riparian wetlands.

Seasonal wet meadows were present at the Salt Flat and Bucktail sites. The Salt Flat site was dominated by two species, Santa Barbara sedge and poison hemlock. Although these were the only two dominant species within the feature, they represented a significant portion of the vegetative cover and satisfied the hydrophytic vegetation criterion. The hydrology of the feature appeared to be influenced by sheetflow runoff that collects at a low point in the local landscape.

The seasonal wet meadow at the Bucktail site contained similar vegetation species to the riparian wetland but the hydrology appears to be influenced by local sheetflow runoff, as well as the Trinity River. A culvert positioned at one end of the feature provides a mechanism for transporting flow between the seasonal wet meadow and the fresh emergent wetland downstream, dependent on the hydraulic gradient and seasonal conditions. Neither feature is associated with surface runoff other than local sources that provide sheetflow during runoff events.

The single fresh emergent wetland within the study area was found at the Bucktail site. It occurs on the opposite side of Browns Mountain Road to the seasonal wet meadow on the site, south of the road and west of the Trinity River. A culvert conveys water flows under the road between the fresh emergent wetland and the seasonal wet meadow, although the fresh emergent wetland is lower in elevation than the seasonal wet meadow, as evidenced by its inundation in the middle of July. The hydrology of the fresh emergent wetland appears to be driven by sheetflow runoff as well as high flows from the Trinity River. Surrounding the fresh emergent wetland is a riparian thicket dominated by narrow-leafed willow and white alder that borders the river and is included as part of the riparian wetlands (montane riparian community) delineated on the site.

There are no isolated waters present within the study area since waters are not considered isolated if, at any time, a feature overflows its banks and connects with another feature that is ultimately connected to a navigable water. In a wet year, all of the features within the study area, upon overflowing their banks, would drain into the Trinity River, which ultimately flows into the Pacific Ocean. The results of the delineation are summarized below by project site:

Salt Flat

The three types of jurisdictional wetlands identified within the Salt Flat Bridge ESL are riparian wetland (montane riparian), seasonal wet meadow, and riverine (**Figure 3.7-1a**). A description of these wetlands is provided under the vegetation subsection. A total of 2.48 acres of riverine habitat (other waters), 0.01 acre of seasonal wet meadow habitat, and 2.14 acres of riparian wetland habitat was delineated within the ESL and subsequently verified by the Corps on March 25, 2003

Bucktail

The five types of jurisdictional wetlands identified within the ESL at Bucktail Bridge are riparian wetland (montane riparian), seasonal wet meadow, riparian wet meadow, fresh emergent wetland, and riverine (**Figure 3.7-1b**). A description of these wetlands is provided under the vegetation subsection. A total of 2.22 acres of riparian wetland habitat, 0.46 acre of seasonal wet meadow, 0.30 acre of riparian wet meadow, 0.10 acre of fresh emergent wetland, and 1.70 acres of riverine habitat was delineated within the ESL and subsequently verified by the Corps on March 25, 2003.

Poker Bar

The two types of jurisdictional wetlands identified within the Poker Bar Bridges ESL are riparian wetland (montane riparian) and riverine (**Figure 3.7-1c**). A description of these wetlands is provided under the vegetation subsection. A total of 0.84 acre of riverine habitat (other waters) and 0.73 acre of riparian wetland habitat was delineated within the ESL and subsequently verified by the Corps on March 25, 2003.

Biggers Road

The two types of jurisdictional wetlands identified within the ESL at Biggers Road Bridge are riparian wetland (montane riparian) and riverine (**Figure 3.7-1d**). Riverine habitat occurs as open water within the Trinity River. A description of these wetlands is provided under the vegetation subsection. A total of 1.09 acres of riverine habitat (other waters) and 0.65 acre of riparian wetland habitat was delineated within the ESL and subsequently verified by the Corps on March 25, 2003.

3.7.2 REGULATORY SETTING

This section lists specific environmental review and consultation requirements and identifies permits and approvals that must be obtained from local, state, and federal agencies before construction of the proposed Project.

Federal

U. S. Army Corps of Engineers

Section 404, Clean Water Act

The objective of the Clean Water Act (CWA 1977, as amended) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Discharge of fill material into "waters of the United States," including "wetlands," is regulated by the Corps under Section 404 of the federal Clean Water Act (33 USC 1251-1376). Corps regulations implementing Section 404 define "waters of the U.S." to include intrastate waters, including lakes, rivers, streams, wetlands, and natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce. "Wetlands" are defined for regulatory purposes as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3; 40 CFR 230.3). The placement of structures in "navigable waters of the U.S." is also regulated by the Corps under Section 10 of the federal Rivers and Harbors Act (33 USC 401 et seq.). Projects are permitted under either individual or general (e.g., nationwide) permits. Specific applicability of permit type is determined by the Corps on a case-by-case basis. Based on preliminary conversation with the Corps (San Francisco District – Eureka Field Office), it appears that the proposed Project may be permitted under Nationwide Permit Number 14 (Linear Transportation Projects).

In 1987 the Corps published a manual that standardized the manner in which waters, including wetlands, were to be delineated nationwide. To determine whether areas that appear to be wetlands are subject to Corps jurisdiction (i.e., are "jurisdictional" wetlands), a wetlands delineation must be performed. Under normal circumstances, positive indicators from three parameters (1) wetland hydrology, (2) hydrophytic vegetation, and (3) hydric soils must be present to classify a feature as a jurisdictional wetland. In addition to verifying wetlands for potential jurisdiction, the Corps is responsible for the issuance of permits for projects that propose filling of wetlands. Any permanent loss of a jurisdictional wetland as a result of project construction activities is considered a significant impact.

The location and boundaries of wetlands and other waters potentially impacted by the proposed project were evaluated based on field surveys, aerial photograph interpretation, and existing published information. The delineation was conducted on July 16-18, 2002, July 23-24, 2002, and March 3, 2002, using methods specified in the Corps 1987 guidelines (Environmental Laboratory 1987). The Corps verified the delineation on March 25, 2003. This report is to be used by the Corps to determine the location and extent of Section 404 and Section 10 jurisdiction.

U.S. Fish and Wildlife Service

Federal Endangered Species Act

The ESA defines "take" (Section 9) and generally prohibits the "taking" of a listed endangered or threatened species (16 USC. 1532, 50 CFR 17.3). Under the ESA, the "take" of a federally listed threatened or endangered species is deemed to occur where an intentional or negligent act or omission results in an action: "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The term "harm" includes acts that actually kill or injure wildlife. Such acts may include significant habitat modification or degradation when it actually kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding or sheltering. Section 7 of the ESA requires federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the

destruction or adverse modification of designated critical habitat for these species. The BOR and the BLM, as the federal lead agencies for this project, are required to consult with NMFS concerning project effects to SONCC ESU of coho salmon pursuant to Section 7 of the ESA.

Migratory Bird Treaty Act (MBTA)

Migratory birds are protected under the MBTA of 1918 (16 USC 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The direct injury or death of an individual of this species, due to construction activities or any construction-related disturbance that causes nest abandonment or forced fledging of this species, would be considered a significant impact. Any removal of active nests during the breeding season or any disturbance that results in the abandonment of nestlings is considered a "take" of the species under federal law. Impacts on migratory birds that result in a "take" of a species would be significant.

State

California Department of Fish and Game

Streambed Alteration (Sections 1600-1607 of the California Fish & Game Code)

State and local public agencies such as Trinity County, though not federal agencies such as the BOR or the BLM, are subject to Section 1601 of the California Fish and Game Code, which governs construction activities that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the CDFG. Under Section 1601, a discretionary Stream Alteration Agreement permit from the CDFG (Region 1 for the proposed Project) must be issued by the CDFG to Trinity County prior to the initiation of construction activities within lands under jurisdiction. As a general rule, this requirement applies to any work undertaken within the 100-year floodplain of a stream or river containing fish or wildlife resources.

California Endangered Species Act

Under the CESA, the CDFG has the responsibility for maintaining a list of endangered and threatened species (California Fish and Game Code 2070). The CDFG maintains a list of "candidate species" which are species that the CDFG formally notices as being under review for addition to the list of endangered or threatened species. The CDFG also maintains lists of "species of special concern" which serve as species "watch lists." Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project study area and determine whether the proposed project will have a potentially significant impact on such species. In addition, the CDFG encourages informal consultation on any proposed project that may impact a candidate species.

Project-related impacts to species on the CESA endangered or threatened list would be considered significant. State-listed species are fully protected under the mandates of the CESA. "Take" of protected species incidental to otherwise lawful management activities may be authorized under Section 2081 of the Fish and Game Code of California. Authorization from the CDFG would be in the form of an Incidental Take Permit. For the Trinity River Bridges Project, the County would need to obtain an incidental take permit if the project could result in the take of a state-listed species (i.e., coho salmon).

Native Plant Protection Act

The Native Plant Protection Act (California Fish and Game Code Sec. 1900-1913) prohibits the taking, possessing, or sale within the state of any plants with a state designation of rare, threatened, or endangered (as defined by the CDFG). An exception to this prohibition Act allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify the CDFG and give that state agency at least 10 days to come and retrieve (and presumably replant) the plants before they are plowed under or otherwise destroyed (Fish and Game Code, § 1913 exempts from "take" prohibition "the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way"). Project impacts to these species are not considered significant unless the species are known to have a high potential to occur within the area of disturbance associated with construction of the project.

Birds of Prey

Under Section 3503.5 of the California Fish and Game Code it is unlawful to take, possess, or destroy any birds in the orders of Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird expect as otherwise provided by this code or any regulation adopted pursuant thereto.

"Fully Protected" Species

California statutes also accord "fully protected" status to a number of specifically identified birds, mammals, reptiles, and amphibians. These species cannot be "taken" even with an incidental take permit. Section 3505 makes it unlawful to "take" "any aigrette or egret, osprey, bird of paradise, goura, numidi, or any part of such a bird." Section 3511 protects from "take" the following "fully protected birds": (a) American peregrine falcon (*Falco peregrinus anatum*); (b) brown pelican; (c) California black rail (*Laterallus jamaicensis coturniculus*); (d) California clapper rail (*Rallus longirostris obsoletus*); (e) California condor (*Gymnogyps californianus*); (f) California least tern (*Sterna albifrons browni*); (g) golden eagle; (h) greater sandhill crane (*Grus canadensis tabida*); (i) light-footed clapper rail (*Rallus longirostris levipes*); (j) southern bald eagle (*Haliaeetus leucocephalus leucocephalus*); (k) trumpeter swan (*Cygnus buccinator*); (l) white-tailed kite (*Elanus leucurus*); and (m) Yuma clapper rail (*Rallus longirostris yumanensis*). Section 3513 makes it "unlawful to take or possess any migratory nongame bird as designated in the MBTA . . ., except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA."

California Fish and Game Code section 4700 identifies the following "fully protected mammals" that cannot be "taken": (a) Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*); (b) bighorn sheep (*Ovis canadensis*), except Nelson bighorn sheep (subspecies *Ovis canadensis nelsoni*); (d) Guadalupe fur seal (*Arctocephalus townsendi*); (e) ring-tailed cat (genus *Bassariscus*); (f) Pacific right whale (*Eubalaena sieboldi*); (g) salt-marsh harvest mouse (*Reithrodontomys raviventris*); (h) southern sea otter (*Enhydra lutris nereis*); and (i) wolverine (*Gulo gulo*).

Fish and Game Code section 5050 protects from "take" the following "fully protected reptiles and amphibians": (a) blunt-nosed leopard lizard (*Crotaphytus wislizenii silus*); (b) San Francisco garter snake (*Thamnophis sirtalis tetrataenia*); (c) Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*); (d) limestone salamander (*Hydromantes brunus*); and (e) black toad (*Bufo boreas exsul*).

Of all of these "fully protected species," the only ones that may be of concern for the proposed Project are American peregrine falcon, golden eagle, and wolverine.

California Regional Water Quality Control Board (RWQCB)

Section 401 Water Quality Certification/ Waiver

The NCRWQCB, Trinity River Basin Region, is responsible for enforcing water quality criteria and protecting water resources in the project area. The NCRWQCB is responsible for controlling discharges to surface waters of the state by issuing waste discharge requirements (WDRs), or commonly by issuing conditional waivers to WDRs. The NCRWQCB requires that a project proponent obtain a Section 401 (Clean Water Act) water quality certification or waiver for Section 404 permits granted by the Corps. For wetlands impacts totaling less than an acre, the NCRWQCB typically issues a waiver, provided the applicant is also applying for a Streambed Alteration Permit from the CDFG. The NCRWQCB has 60 days to issue a waiver. For between one and two acres of wetland impacts, a waiver could also be issued, but only after thorough review by agency or public comments during the 40-day comment period on the Corps' issue notice (if the Corps has required an individual permit). For more than two acres of wetland removal, the NCRWQCB requires a mitigation plan, a public hearing, and approval of the water quality certification by the SWRCB.

A request for water quality certification (including WDRs) by the NCRWQCB and a Notice of Intent (NOI) application for a General Permit for Storm Water Discharges Associated with Construction Activities will be prepared and submitted following completion of the CEQA environmental document and submittal of the wetland delineation to the Corps.

Local

Trinity County General Plan Goals and Objectives

The Trinity County General Plan contains goals and policies designed to guide the future physical development of the county, based on current conditions. The general plan contains all the state-required elements, including community development and design, transportation, natural resources, health and safety, noise, housing, recreation, economic development, public facilities and services, and air quality. The following goals and policies, relative to vegetation, wildlife, and wetland issues associated with the project study area, were taken from the applicable elements of the general plan (County 2001). This includes the Lewiston Community Plan (County 1986) and the Douglas City Plan (County 1987).

County Wide Goals and Objectives

Environmental. To strive to conserve those resources of the county that are important to its character and economic well-being:

- By assuring that developments occurring on these lands are compatible with the resources.
- By strongly supporting the county as "lead agency" or as an integral participant in any state or federal project within the county so that all agencies are made aware of local desires and all plans are coordinated.
- By utilizing a sound resource-related planning process in decision-making.
- By protecting not only rare and endangered species, but also required habitat for more plentiful species.

Lewiston Community Plan Goals and Objectives

This plan includes the area centered on the Trinity River from Lewiston Lake to slightly downstream of the confluence of Grass Valley Creek and the Trinity River. Project sites within the planning area include Salt Flat and Bucktail.

Natural Resources

Goal: To preserve and maintain open space as a means of providing habitat for all species of wildlife.

- Review potential uses within floodplain areas for wildlife impacts
- Retain open space for habitat uses.

Goal: To protect areas of special habitat considerations within the Plan area.

- Discourage intensive use of areas including the Great Blue Heron (*Ardea herodias*) rookery site downstream of Salt Flat. *Note: Since the time the Lewiston Community Plan was adopted on September 16, 1986, the rookery has been abandoned (Pat McLaughlin, CDFG biologist, personal communication). The rookery was abandoned when the hatchery was modified to exclude bird species that prey on fish.*
- Encourage retention of riparian habitat areas.
- Work with property owners adjacent to the Trinity River to retain existing riparian vegetation.

Goal: To encourage the sound use of mineral resources, especially sand and gravel operations, which reduce sedimentation of the river.

Douglas City Community Plan

This plan includes the area centered on the Trinity River from Grass Valley Creek to slightly downstream of Steiner Flat. Project sites within the planning area include Poker Bar and Biggers Road bridge sites.

Natural Resources

Goal: To preserve and maintain open space for a variety of wildlife uses.

- Protect floodplain areas from intensive development that could lead to adverse impacts to wildlife.
- Preserve and protect special habitats areas, such as mineral springs, and snags utilized by Bald Eagles and other raptors.

Goal: To protect and improve fish habitat within the Plan area.

- Encourage the development of restoration projects within the Plan area.

Goal: Encourage the continued use of suitable lands for resource production purposes.

- Encourage the sound use of mineral resources, especially sand and gravel operations that also reduce the sedimentation in the Trinity River.

Project Consistency with the Trinity County General Plan and Community Plans

As described in Chapter 1, Introduction, the proposed Trinity Bridges Project would:

- Provide safe and reasonable year-round access to parcels of land served by the Salt Flat, Bucktail, Poker Bar and Biggers Road bridges across the Trinity River.
- Allow dam operators maximum flexibility to provide instream flow releases from Lewiston Dam adequate to meet the fishery and geomorphic flow needs for the mainstem Trinity River and to fulfill the Trinity River TMDL for sediment and restore the coldwater fishery beneficial use.

The following project objectives apply to the project's lead/responsible agencies for CEQA purposes:

- Minimize the threat to public safety and potential damage to property posed by the existing high likelihood of flooding
- Provide maximum flexibility for implementing a variety of potential Trinity River fishery flow alternatives, as well as other flow alternatives outside the ROD such as increasing dam releases during periods of high downstream tributary inflows
- Allow for high-efficiency sediment transport in the Trinity River to maximize the amount of sediment transported on a per acre-foot basis so that Trinity River can be removed from California's Clean Water Act Section 303(d) Impaired Waterbodies List, while minimizing the total amount of water necessary to transport sediment through the river system
- Provide maximum flexibility for operations of the Trinity River Division during periods of high runoff and flooding which could result in increased water in storage available for multiple beneficial uses (i.e., fisheries, recreation, water supply, water quality and power production)
- Provide alternative access on a short-term basis during project implementation
- Recovery of fish and wildlife resources that are listed as threatened and endangered

The following objectives apply to the projects responsible and trustee agencies, including the HVT, NCRWQCB, the State Lands Commission (SLC), the CDFG, and the SWRCB:

- Comply with the Water Code to ensure the highest reasonable quality of waters of the state and allocate those waters to achieve the optimum balance of beneficial uses
- Protect the public trust assets of the Trinity River watershed
- Protect, conserve, restore, and manage fish, wildlife, and native plant resources
- Comply with the Water Quality Control Plan for the Hoopa Valley Indian Reservation to preserve and enhance water quality on the Reservation, and to protect the beneficial uses of water.

These project objectives are consistent with the applicable general plan goals and policies summarized above.

3.7.3 ENVIRONMENTAL CONSEQUENCES/IMPACTS AND MITIGATION MEASURES

Methodology

The following section provides a brief overview of the analytic methodologies utilized in assessing potential impacts of the proposed Project on vegetation, wildlife, and wetland resources. These methodologies included a comprehensive literature search and focused field surveys.

Evaluation of the possible presence of special status plant and wildlife species, and sensitive plant communities/habitats within the Project study limits were conducted using database searches, informally consulting with resource agencies (i.e., CDFG, NMFS, USFWS), and reviewing environmental documents and technical studies prepared for projects in the vicinity. The database searches conducted as part of the evaluation were the CNDDB and the CNPS Electronic Inventory. The CNDDB contains occurrence records for special-status plant and animal species, as well as sensitive natural vegetation communities, by USGS quadrangle. A search of the *Rush Creek Lakes, Trinity Dam, Papoose Creek, Junction City, Weaverville, Lewiston, French Gulch, Hoosimbim Mountain,* and *Bully Choop Mountain* quadrangles was conducted for the Project. The CNPS Electronic Inventory allows users to query the *Inventory of Rare and Endangered Vascular Plants of California* using a set of search criteria. The result of the search is a list of special-status plant species. In addition to the database searches, NSR submitted a written request for a list of special-status species with potential to occur in the project area from the USFWS. Agency representatives from the Corps, CDFG, NMFS, and USFWS, were contacted to discuss specific biological resource issues associated with the proposed project, including potential impacts and suggested mitigation measures.

An initial reconnaissance-level site visit was conducted on May 15, 2002 to characterize the vegetation communities and associated wildlife habitats present within the ESL. A jurisdictional wetland delineation was conducted (according the 1987 Corps guidelines) by NSR on July 16-18, 2002, July 23-24, 2002, and March 3, 2002, within the project study limits. An assessment for bat roosting habitat was conducted on May 15, 2002. A protocol-level survey for northern spotted owl was conducted on the following dates: May 15, May 23, June 6, June 17, June 25, and July 10, 2002. A focused plant survey was conducted on April 8 and 9, May 25 and 25, June 28, and July 1, 2002 to determine if special-status plant species were present within the ESL.

Significance Criteria

Significance criteria used to analyze the potential impacts of the proposed Project on vegetation, wildlife, and wetland resources include factual and scientific information, and regulatory standards of county, state, and federal agencies, including the *CEQA Guidelines*. These criteria have been developed to establish thresholds to determine significance of impacts pursuant to the CEQA (Section 15064.7) and should not be confused with a "take" or adverse effect under the ESA. Additionally, significance criteria do not apply for purposes of the NEPA.

Impacts on vegetation would be significant if project implementation would result in any of the following:

- Potential for reductions in the number, or restrictions of the range, of an endangered or threatened plant species or a plant species that is a candidate for state listing or proposed for federal listing as endangered or threatened
- Potential for substantial reductions in the habitat of any native plant species including those that are listed as endangered or threatened or are candidates or proposed for endangered or threatened status

- Potential for causing a native plant population to drop below self-sustaining levels
- Potential to eliminate a native plant community
- Substantial adverse effect, either directly or through habitat modifications, on any plant identified as a sensitive or special-status species in local or regional plans, policies, or regulations
- Substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations
- A conflict with any local policies or ordinances protecting vegetation resources
- A conflict with, or violation of, the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, state, or federal habitat conservation plan relating to the protection of plant resources

Impacts on wildlife would be significant if project implementation would result in any of the following:

- Potential for reductions in the number, or restrictions of the range, of an endangered or threatened wildlife species or a wildlife species that is a candidate for state listing or proposed for federal listing as endangered or threatened
- Potential for substantial reductions in the habitat of any wildlife species including those that are listed as endangered or threatened or are candidates or proposed for endangered or threatened status
- Potential for causing a wildlife population to drop below self-sustaining levels
- Substantially block or disrupt major terrestrial wildlife migration, or travel corridors
- Substantial adverse effect, either directly or through habitat modifications, on any wildlife species identified as a sensitive or special-status species in local or regional plans, policies, or regulations
- Substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations
- A conflict with any state or local policies or ordinances protecting wildlife resources
- A conflict with, or violation of, the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, state, or federal habitat conservation plan relating to the protection of wildlife species No Action.

Impacts on wetlands would be significant if they would result in any of the following:

- Substantial adverse effect on any riparian habitat
- Substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
- A conflict with any local policies or ordinances protecting wetland and/or riparian resources

- A conflict with, or violation of, the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, state, or federal habitat conservation plan relating to the protection of wetland resources

Impacts and Mitigation Measures

Table 3.7-4 summarizes the potential vegetation, wildlife, and wetlands impacts resulting from construction and operation of the Trinity River Bridges Project.

TABLE 3.7-4
SUMMARY OF VEGETATION, WILDLIFE, AND WETLANDS IMPACTS FROM THE PROPOSED TRINITY RIVER BRIDGES PROJECT

Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Alternative 2
1. Implementation of the Trinity River Bridges Project would result in the loss of upland plant communities.	Salt Flat	NI	LS	LS	LS
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A
2. Construction of the Trinity River Bridges Project could result in the loss of individuals of a special-status plant species.	Salt Flat	NI	NI	NI	NI
	Bucktail	NI	NI	NI	N/A
	Poker Bar	NI	NI	NI	N/A
	Biggers Road	NI	NI	NI	N/A
3. Construction activities associated with the proposed Trinity River Bridges Project could result in the loss of jurisdictional wetlands.	Salt Flat	NI	S	S	S
	Bucktail	NI	S	S	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
4. Construction activities associated with the proposed Trinity River Bridges Project could disrupt active raptor nests (northern goshawk, Cooper's hawk, sharp-shinned hawk).	Salt Flat	NI	S	S	S
	Bucktail	NI	S	S	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
5. Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to nesting individuals of yellow warbler, and yellow-breasted chat.	Salt Flat	NI	S	S	S
	Bucktail	NI	S	S	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
6. Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to northern spotted owl.	Salt Flat	NI	LS	LS	LS
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A
7. Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to little willow flycatcher.	Salt Flat	NI	S	S	S
	Bucktail	NI	S	S	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A

TABLE 3.7-4
SUMMARY OF VEGETATION, WILDLIFE, AND WETLANDS IMPACTS FROM THE PROPOSED TRINITY RIVER BRIDGES PROJECT

Impact	Project Site	No-Action Alternative	Proposed Action	Alternative 1	Alternative 2
8. Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to BLM sensitive species and Survey and Manage species.	Salt Flat	NI	LS	LS	LS
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A
9. Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to foothill yellow-legged frog.	Salt Flat	NI	S	S	S
	Bucktail	NI	S	S	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
10. Construction activities associated with the proposed Trinity River Bridges Project could impact northwestern pond turtle.	Salt Flat	NI	S	S	S
	Bucktail	NI	S	S	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
11. Construction activities associated with the proposed Trinity River Bridges Project could restrict terrestrial wildlife movement through the Project ESL.	Salt Flat	NI	LS	LS	LS
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A
12. Construction activities associated with the proposed Trinity River Bridges Project could disrupt active swallow nests.	Salt Flat	NI	S	S	S
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	S	S	N/A
	Biggers Road	NI	S	S	N/A
13. Construction activities associated with the proposed Trinity River Bridges Project could result in the loss of bald eagle, golden eagle, and osprey foraging and perching habitat.	Salt Flat	NI	LS	LS	LS
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A
14. Construction activities associated with the proposed Trinity River Bridges Project could result in the disruption of active bat roosts.	Salt Flat	NI	LS	LS	LS
	Bucktail	NI	LS	LS	N/A
	Poker Bar	NI	LS	LS	N/A
	Biggers Road	NI	LS	LS	N/A

Notes:
LS = Less than Significant S = Significant NI = No Impact SU = Significant Unavoidable
N/A = Not Applicable

Salt Flat Bridge

Impact 3.7-1: Construction activities associated with the proposed Trinity River Bridges Project would result in the loss of upland plant communities. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, no construction-related impacts to upland plant communities would occur.

Proposed Action (Replacement Downstream, Private Ownership)

Table 3.7-5 indicates the total acreage of permanent and temporary impacts to upland plant communities as a result of constructing a new bridge just downstream of the existing Salt Flat Bridge (the Proposed Action).

TABLE 3.7-5
EXPECTED AREA OF DISTURBANCE TO UPLAND PLANT COMMUNITIES WITHIN THE SALT FLAT PROJECT STUDY AREA: PROPOSED ACTION AND PROJECT ALTERNATIVES

Upland Plant Community Type	Approximate Area of Disturbance (Acres)					
	Proposed Action		Alternative 1		Alternative 2	
	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent
Montane Hardwood-Conifer	1.219	0.060	1.133	0.190	1.072	0.258
Montane Riparian[1] - Upland	0.696	0.172	0.650	0.175	0.628	0.236
Road	0.486	0.025	0.483	0.023	0.482	0.024
Total	**2.401**	**0.257**	**2.266**	**0.388**	**2.182**	**0.518**

The permanent loss of 0.257 acre and temporary impact to 2.401 acres of upland habitat (including urban habitat such as roads, lawns) is not considered significant due to the relative abundance of these upland plant community types in the project area.

Alternative 1 (Replacement Upstream, Private Ownership)

Table 3.7-5 indicates the total acreage of permanent and temporary impacts to upland plant communities as a result of constructing a new bridge upstream of the existing Salt Flat Bridge (Alternative 1). The permanent loss of 0.388 acre and temporary impact to 2.266 acres of upland habitat is not considered significant due to the relative abundance of these upland plant community types in the project area.

Alternative 2 (Replacement Upstream, Public Ownership)

Table 3.7-5 indicates the total acreage of permanent and temporary impacts to upland plant communities as a result of constructing a new bridge upstream of the existing Salt Flat Bridge (Alternative 2). The permanent loss of 0.518 acres and temporary impact to 2.182 acres of upland habitat is not considered significant due to the relative abundance of these upland plant community types in the project area.

[1] In some instances, montane riparian habitat occurs in upland areas. This community type, while comprised of similar plant species as montane riparian wetlands, does not meet two of the three Corps criteria for being classified as a jurisdictional water (i.e., lacking hydrology and hydric soils indicators).

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1; Alternative 2

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-2: Construction of the Trinity River Bridges Project could result in the loss of individuals of a special-status plant species. ***No Impact for the No-Action Alternative, Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, no construction-related impacts to a special-status plant species would occur.

Proposed Action (Replacement Downstream, Private Ownership); Alternative 1 (Replacement Upstream, Private Ownership); Alternative 2 (Replacement Upstream, Public Ownership)

The entire Salt Flat ESL was surveyed for special-status plant species in 2002. No special-status plants were detected within the Salt Flat ESL.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1; Alternative 2

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-3: Construction activities associated with the proposed Trinity River Bridges Project could result in the loss of jurisdictional wetlands. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, no loss of jurisdictional wetlands would occur.

Proposed Action (Replacement Downstream, Private Ownership)

A delineation of potential jurisdictional wetlands and other waters of the U.S. within the Salt Flat Bridge ESL (following the methodology identified in the 1987 Corps guidelines), was conducted by NSR on July 16-18, 2002, July 23-24, 2002, and March 3, 2003. A total of 4.63 acres of potential jurisdictional waters, comprised of 2.48 acres of riverine (other waters), 0.001 acre of seasonal wet meadow, and 2.14 acres of riparian wetland features were mapped within the ESL. The Corps verified these acreages on March 25, 2003. **Table 3.7-6** lists wetland impacts for the Proposed Action and each project alternative.

Construction activities associated with the Proposed Action will result in both permanent and temporary effects to jurisdictional wetland features located within the Salt Flat ESL. Construction of the Proposed Action would result in

the permanent loss of 0.023 acre of riparian wetland, but would result in a net increase in riverine habitat since this alternative would result in three less piers being located within the Trinity River floodplain. Impacts to SRA habitat are analyzed in Section 3.6, Fishery Resources. Construction access routes, channel improvements, and the placement of gravel work berms would temporarily disturb 0.271 acre of riparian wetland and 0.304 acre of riverine habitat. Both permanent and temporary impacts to jurisdictional wetlands would be considered significant.

TABLE 3.7-6
EXPECTED AREA OF DISTURBANCE TO JURISDICTIONAL WATERS WITHIN THE SALT FLAT PROJECT STUDY AREA: PROPOSED ACTION AND PROJECT ALTERNATIVES

Wetland Type	Approximate Area of Disturbance (Acres)					
	Proposed Action		Alternative 1		Alternative 2	
	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent
Riparian Wetland (Montane Riparian)	0.271	0.023	0.228	0.041	0.248	0.049
Riverine	0.304	0.034	0.399	0	0.429	0
Total	**0.575**	**0.057**	**0.627**	**0.041**	**0.677**	**0.049**

Alternative 1 (Replacement Upstream, Private Ownership)

Construction activities associated with Alternative 1 will result in both permanent and temporary effects to jurisdictional wetland features located within the Salt Flat ESL. Project construction associated with Alternative 1 would result in the permanent loss of 0.041 acre of riparian wetland, but would result in a net increase in riverine habitat since this alternative would result in three less piers being located within the river floodplain. Construction access routes, channel improvements, and the placement of gravel work berms would temporarily disturb 0.228 acre of riparian wetland and 0.399 acre of riverine habitat. Both permanent and temporary impacts to jurisdictional wetlands would be considered significant.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction activities associated with Alternative 2 will result in both permanent and temporary effects to jurisdictional wetland features located within the Salt Flat ESL. Project construction associated with Alternative 2 would result in the permanent loss of 0.049 acre of riparian wetland, but would result in a net increase in riverine habitat since this alternative would result in three less piers being located within the river floodplain. Construction access and staging would temporarily disturb 0.248 acre of riparian wetland and 0.429 acre of riverine habitat. Both permanent and temporary impacts to jurisdictional wetlands would be considered significant.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1; Alternative 2

SF-3a: Prior to the start of construction activities, the BOR shall retain a qualified biologist to identify construction access routes within the project area to ensure that these features avoid and/or minimize to the fullest extent impacts to jurisdictional waters. In addition, jurisdictional waters shall be clearly identified in the construction drawings along with specific instructions to avoid any construction activity within these features. Each jurisdictional feature proposed to be avoided will be flagged, staked, or otherwise marked to ensure that construction activities do not encroach upon these features. The exclusionary fencing shall be inspected and maintained on a regular basis throughout the project construction phase.

SF-3b: To mitigate for a loss of jurisdictional waters habitat, specifically riparian wetland (montane riparian), the Project would be designed to avoid and minimize losses to wetland vegetation within the Project ESL to the fullest extent feasible. When loss of riparian wetland is unavoidable, the BOR will conduct mitigation at a ratio of 3:1 per woody riparian plant species for habitat temporarily affected and permanently lost due to project construction activities.

SF-3c: For riparian wetland (montane riparian) habitat, following completion of construction activities, plantings shall be installed to replace all riparian trees and shrubs (by species) that were removed as a result of construction (temporary and permanent impacts). Replacement shall occur at a ratio of 3:1 per woody riparian species removed as a result of project construction activities. Replacement trees and shrubs should be planted in the appropriate season (i.e., spring or fall) following the completion of construction. Propagules (i.e., shrub cuttings, trees seedlings) shall be obtained either onsite or from a local nursery and planted along the Trinity River within the immediate Project ESL. Additional planting may need to occur at on off-site location depending on available opportunities for mitigation within and adjacent to the Project ESL. The BOR or their contractor shall monitor the plantings annually for up to five years to ensure that trees and shrubs have become established. Supplemental planting would be conducted, as necessary, to ensure that the performance standard is met. Once riparian wetlands mitigation has been successfully completed, the BOR shall submit a memorandum to the Corps, CDFG, and NMFS documenting the results. *Note: This measure may be conducted in conjunction with Measures SF-6a through 6d (Loss of Shaded Riverine Aquatic Habitat), as discussed in Section 3.6, Fishery Resources.*

Significance After Mitigation: *Less than Significant.*

Impact 3.7-4: Construction activities associated with the proposed Trinity River Bridges Project could disrupt active raptor nests. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, no construction-related impacts to active raptor nests would occur.

Proposed Action (Replacement Downstream, Private Ownership)

Noise and visual disturbance associated with construction activities occurring during the nesting season (March through July) can disrupt nesting raptors that would lead to nest abandonment and nest failure. Raptor species such Cooper's hawk and sharp-shinned hawk which are designated as state species of concern, as well as red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), American kestrel (*Falco sparverius*), great horned owl (*Bubo virginianus*), and barn owl (*Tyto alba*) are all known to occur and nest throughout the Trinity River corridor.

Particular nesting habitat preferred by these species that is present within or adjacent to the Salt Flat ESL includes montane hardwood-conifer and montane riparian (upland) habitat.

Although the raptor species mentioned above are not afforded full protection under the ESA, it is considered unlawful to take, possess, or destroy the nest or eggs of any birds pursuant to Section 3503.5 of the Fish and Game Code of California and the MBTA (16 USC 703-711). As a result, any loss or disturbance to these nesting raptor species would be considered a significant impact.

Alternative 1 (Replacement Upstream, Private Ownership)

Construction-related impacts to active raptor nests associated with Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction-related impacts to active raptor nests associated with Alternative 2 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1; Alternative 2

SF-4a: All vegetation (i.e., trees, shrubs) that will need to be removed within the project construction limits shall be removed between September 1st and March 1st (i.e., outside the nesting season for raptor species) to ensure that active raptor nest trees are not removed as a result of project construction activities. Vegetation removal activities shall be limited to ground-level cuttings and should not result in root removal or other ground-disturbances to avoid the potential for erosion and sedimentation. If all vegetation removal has been completed between September 1st and March 1st, no pre-construction surveys would be required.

SF-4b: If vegetation removal cannot be accomplished between September 1st and March 1st, the BOR shall retain a qualified biologist to conduct a minimum of one survey (subsequent surveys would be separated by at least one week) for nesting raptors, including Cooper's hawk and sharp-shinned hawk, within a 500-foot radius around proposed construction activities. Active raptor nests located within 500 feet of construction activities shall be mapped, where practicable and feasible. If active nests are identified within the construction disturbance area, they may only be removed prior to March 1st, or after the young have fledged (based on field verification). A qualified biologist shall monitor the nest(s) to determine when the young have fledged and submit status reports to the CDFG, as appropriate, throughout the nesting season. Nest tree removal shall only be performed in consultation with, and with pre-approval from the CDFG.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-5: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to nesting individuals of yellow warbler and yellow-breasted chat. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, no construction-related impacts to nesting individuals of yellow warbler and yellow-breasted chat would occur.

Proposed Action (Replacement Downstream, Private Ownership)

Potential nesting habitat for yellow warbler and yellow-breasted chat is present within the riparian habitat associated with the Trinity River corridor and suitable nesting habitat is found within the ESL. Both of these species are designated as Species of Special Concern by the CDFG. Yellow-breasted chats were observed at Salt Flat during the May 2002 survey. Even though no recorded nest sites for yellow warbler or yellow-breasted chat in the project vicinity were identified by the CNDDB (2002), there is potential for the two species to nest within the Project ESL based on available habitat. The proposed project would require the removal of adjacent riparian vegetation, and noise associated with construction activities also could disturb individuals nesting directly adjacent to the project site. These species are protected by both the MBTA (16 USC 703-711) and the California Fish and Game Code (Sections 3503 and 3513). Essentially, these regulatory provisions consider it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird species designated in the MBTA. As a result, any loss of or disturbance to a nesting yellow warbler or yellow-breasted chat nest would be considered significant.

Alternative 1 (Replacement Upstream, Private Ownership)

Construction-related impacts to nesting individuals of yellow warbler and yellow-breasted chat associated with Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction-related impacts to nesting individuals of yellow warbler and yellow-breasted chat associated with Alternative 2 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1; Alternative 2

SF-5a: All vegetation (i.e., trees, shrubs) that will need to be removed within the construction limits shall be removed between September 1st and March 1st (i.e., outside of the nesting season for yellow warbler and yellow-breasted chat) to ensure that active nest trees are not removed as a result of project construction activities. Vegetation removal activities shall be limited to ground-level cuttings and will not include root removal or other ground-disturbing activities, to avoid potential erosion and sedimentation. If all vegetation removal activities are completed between September 1st and March 1st, no pre-construction surveys would be required.

SF-5b: If vegetation removal cannot be accomplished between September 1st and March 1st, the BOR shall retain a qualified biologist to conduct a minimum of one survey (subsequent surveys would be separated by at least one week) for yellow warbler and yellow-breasted chat within a 500-foot radius around proposed construction limits. Active nests for each species that are located within 500 feet of construction activities

shall be mapped, where practicable and feasible. If active nest trees are identified within the construction disturbance zone, they may only be removed prior to March 1st, or after the young have fledged (based on field verification). A qualified biologist shall monitor the nest to determine when the young have fledged and submit status reports to the CDFG throughout the nesting season. Nest tree removal shall only be performed in consultation with, and with pre-approval from the CDFG.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-6: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to northern spotted owl. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, no construction-related impacts to northern spotted owl would occur.

Proposed Action (Replacement Downstream, Private Ownership)

Although suitable nesting, roosting, and foraging habitat for northern spotted owl is not located in the project study area, suitable dispersal habitat is located in a small area on the west side of Salt Flat Bridge. Protocol-level surveys for northern spotted owl conducted in the project study area indicate that potentially suitable habitat in the project study area is not currently occupied by northern spotted owl.

As previously discussed, there are ten known occurrences of northern spotted owl within 2 to 6 miles of the project. These nesting territories are located beyond the standard exclusionary zones (i.e., within 1.3 miles from a known spotted owl activity center or designated critical habitat) currently recommended to prevent adverse impacts to this species that may occur as a result of construction activities (D. Wineberg, BLM, and T. Quinn, STNF, personal communication, 2002). In addition, no pile driving activity is proposed for this bridge replacement project; therefore, construction noise is anticipated to be minimal and is not likely to impact the northern spotted owl.

Alternative 1 (Replacement Upstream, Private Ownership)

Construction-related impacts to northern spotted owl associated with Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction-related impacts to northern spotted owl associated with Alternative 2 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1; Alternative 2

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-7: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to little willow flycatcher. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, no construction-related impacts to little willow flycatcher would occur.

Proposed Action (Replacement Downstream, Private Ownership)

Montane riparian (upland) habitat within the Salt Flat ESL provides suitable nesting and foraging habitat for little willow flycatcher, although no little willow flycatchers were observed during the 2002 field surveys. Though no nesting individuals have been observed near the project site, there is the potential for new nesting territories to become established within the Salt Flat ESL in subsequent nesting seasons, prior to the start of construction. Disturbance from traffic and equipment operation, and personnel activities during the breeding season (March-July) could result in nest failure or abandonment. There is also a potential for the direct loss of active or potential nest trees or shrubs during site preparation.

Alternative 1 (Replacement Upstream, Private Ownership)

Construction-related impacts to little willow flycatcher associated with Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction-related impacts to little willow flycatcher associated with Alternative 2 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1; Alternative 2

The following mitigation measures shall be implemented to avoid/minimize potential impacts to little willow flycatcher:

SF-7a: If construction is proposed between the months of April and August, a protocol-level survey for willow flycatchers within 500 feet of the construction limits shall be conducted during the spring prior to construction. If no active nests are observed, construction may proceed. If construction activities are to occur between September and March, no surveys would be required. A letter report that summarizes the survey results shall be submitted to the CDFG.

SF-7b: All vegetation (i.e., trees, shrubs) that will need to be removed within the construction limits (including the temporary construction access routes) shall be removed between September 1st and March 1st (i.e., outside

the nesting season for willow flycatcher) to ensure that active nest trees are not removed as a result of project construction activities.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-8: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to BLM sensitive species and Northwest Forest Plan Survey and Manage species. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, no construction-related impacts to BLM sensitive species or Northwest Forest Plan Survey and Manage species would occur.

Proposed Action (Replacement Downstream, Private Ownership)

As previously discussed, surveys for BLM sensitive and Survey and Manage species were conducted within the entire Salt Flat ESL during the spring and summer of 2002. No Survey and Manage vascular plant species or cryptogamic species were present, and no appropriate habitat for these species was identified within those portions of the Salt Flat ESL located on public lands. None of the three BLM sensitive species with potential to occur within the Salt Flat study area were identified during the focused surveys.

Pre-disturbance surveys for mollusks were conducted within the Salt Flat ESL during the spring and fall of 2002. No Survey and Manage mollusks were located during either visit, and much of the defined ESL is unsuitable for mollusk habitat. Ten of the wildlife species with potential to occur within the Salt Flat study area (foothill yellow-legged frog, northwestern pond turtle, golden eagle, Pacific fisher, Pale Townsend's big-eared bat, and small-footed myotis, long-eared myotis, fringed myotis, long-legged myotis, and Yuma myotis bats) are designated BLM Sensitive species. The implementation of mitigation measures SF-9, SF-10, SF-11, SF-13, and SF-14 (discussed later in this section), will reduce potential impacts to these species to a less than significant level.

Alternative 1 (Replacement Upstream, Private Ownership)

Construction-related impacts to BLM sensitive species or Survey and Manage species associated with Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction-related impacts to BLM sensitive species or Survey and Manage species associated with Alternative 2 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1; Alternative 2

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-9: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to foothill yellow-legged frog. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, no construction-related impacts to foothill yellow-legged frog would occur.

Proposed Action (Replacement Downstream, Private Ownership)

The Salt Flat ESL provides suitable habitat for foothill yellow-legged frog, although the species was not observed during field surveys conducted in 2002. Construction activities associated with the Proposed Action, particularly activities associated with the placement of the temporary crossing over the left (east) channel of the Trinity River and construction of the bridge pier and abutments, may impact foothill yellow-legged frogs directly and indirectly. Direct effects include mortality of individuals due to equipment and vehicle traffic, disturbance of boulders or cobbles that support egg masses, and the loss of riparian vegetation cover. The species may also be indirectly affected if construction activities result in degradation of aquatic habitat and water quality due to erosion and sedimentation, accidental fuel leaks, and spills. Construction activities associated with the Proposed Action could potentially result in significant adverse impacts to foothill yellow-legged frog and mitigation is required.

Alternative 1 (Replacement Upstream, Private Ownership)

Construction-related impacts to foothill yellow-legged frog associated with Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction-related impacts to foothill yellow-legged frog associated with Alternative 2 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1; Alternative 2

SF-9a: If any construction within the Trinity River channel will occur prior to August 1st of any construction season, a pre-construction survey for yellow-legged frog larvae and/or eggs shall be conducted by a qualified biologist. This survey would need to be conducted within the construction limits no more than two weeks prior to the start of in-stream construction activities. If larvae or eggs are detected, the biologist shall relocate them to a suitable location outside of the construction limits.

SF-9b: In the event that a yellow-legged frog is observed within the construction limits, the contractor shall temporarily halt in-stream construction activities until the frog has been moved to a safe location outside of the construction limits, within similar habitat.

SF-9c: Mitigation measures presented in Section 3.5 (Water Quality) for addressing erosion and sedimentation and accidental spills shall be fully implemented to mitigate for the potential indirect impacts to potential dispersal habitat due to sedimentation and accidental spills.

SF-9d: Mitigation measures associated with the disturbance to riparian habitat are discussed previously in this section under impacts to jurisdictional wetlands (Mitigation Measure SF-3), and will be fully implemented.

Significance after Mitigation: *Less than Significant*

Impact 3.7-10: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to northwestern pond turtle. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, no construction-related impacts to northwestern pond turtle would occur.

Proposed Action (Replacement Downstream, Private Ownership)

The Salt Flat ESL provides suitable habitat for northwestern pond turtle, although the species was not observed during the 2002 field surveys. Construction activities associated with the Proposed Action, particularly activities associated with the placement of the temporary crossing over the left (east) channel of the Trinity River and construction of the bridge pier and abutments, may impact pond turtles directly and indirectly. Direct effects include mortality of individuals due to equipment and vehicle traffic, disturbance to nests in upland areas, and the loss of riparian vegetation cover. The species may also be indirectly affected if construction activities result in degradation of aquatic habitat and water quality due to erosion and sedimentation, accidental fuel leaks, and spills. Construction activities associated with the Proposed Action could potentially result in significant adverse impacts to northwestern pond turtle and mitigation is required.

Alternative 1 (Replacement Upstream, Private Ownership)

Construction-related impacts to northwestern pond turtle associated with Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction-related impacts to northwestern pond turtle associated with Alternative 2 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1; Alternative 2

SF-10a: A minimum of one survey for pond turtle nests shall be conducted a maximum of one week prior to construction. A qualified biologist shall be retained by the BOR to conduct the survey. If a pond turtle nest

is found, the biologist shall flag the site and determine if construction activities can avoid impacting the nest. If the nest cannot be avoided, the nest should be excavated by the biologist and reburied at a suitable location outside of the construction limits.

SF-10b: In the event that a pond turtle is observed within the construction limits, the contractor shall temporarily halt in-stream construction activities until the turtle has been moved to a safe location outside of the construction limits, within similar habitat.

SF-10c: Mitigation measures presented in Section 3.5 (Water Quality) for addressing erosion and sedimentation and accidental spills shall be fully implemented to mitigate for the potential indirect impacts to potential dispersal habitat due to sedimentation and accidental spills.

SF-10d: Mitigation measures associated with the disturbance to riparian habitat are discussed previously in this section under impacts to jurisdictional wetlands (Mitigation Measure SF-3), and will be fully implemented.

Significance after Mitigation: *Less than Significant*

Impact 3.7-11: Construction activities associated with the proposed Trinity River Bridges Project could restrict terrestrial wildlife movement through the Project ESL. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, construction-related restriction of terrestrial wildlife movement through the Project ESL would not occur.

Proposed Action (Replacement Downstream, Private Ownership)

The Trinity River corridor provides habitat and travel corridors for such species as Pacific fisher, black-tailed deer, river otter, beaver, common merganser (*Mergus merganser*), green heron (*Butorides virescens*), black-crowned night heron (*Nycticorax nycticorax*), wood duck (*Aix sponsa*), belted kingfisher (*Ceryle alcyon*), cliff swallow (*Hirundo pyrrhonota*), bank swallow, and raccoon. The riparian vegetation along the Trinity River, in association with adjacent Klamath mixed conifer and montane hardwood-conifer habitat, provides connected habitat within an area that has been fragmented by rural residential development and road building. Black-tailed deer inhabit shrublands, forests, and oak woodlands and utilize riparian vegetation for cover. Construction noise could temporarily alter foraging patterns of resident wildlife species; however, no long-term impediments to wildlife movement within the Project ESL are anticipated as a result of implementing the Proposed Action since the project site currently supports an existing bridge and roadway.

Alternative 1 (Replacement Upstream, Private Ownership)

Construction-related impacts to terrestrial wildlife movement associated with Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction-related impacts to terrestrial wildlife movement associated with Alternative 2 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1; Alternative 2

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-12: Construction activities associated with the proposed Trinity River Bridges Project could disrupt active swallow nests. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, construction-related impacts to active swallow nests would not occur.

Proposed Action (Replacement Downstream, Private Ownership)

The existing Salt Flat bridge structure is not currently used as a nesting site by cliff swallows or barn swallows, which are protected by the MBTA (CDFG Code Section 3513). Though no nesting individuals were observed in 2002, there is the potential for new nests to become established under the existing structure in subsequent nesting seasons, prior to the start of construction. Any proposed construction activities associated with the underside of the bridge structure (i.e., bridge removal) during the nesting season (i.e., April-July) could destroy nests with young. This would be a significant impact.

Alternative 1 (Replacement Upstream, Private Ownership)

Construction-related impacts to active swallow nests associated with Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction-related impacts to active swallow nests associated with Alternative 2 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1; Alternative 2

If the current bridge structure is left undisturbed until after July 31st, then no additional mitigation is required. If construction activities involving the disturbance or removal of the existing bridge occur prior to July 31st of any given construction season, the following mitigation shall be implemented to reduce potential impacts to nesting swallows to a less than significant level:

SF-12a: The BOR or its contractor shall remove all old swallow nests, if present, on the existing bridge structure prior to March 1st of the construction year. The old nests shall be removed by washing them down with water and/or knocking them down with poles and scrapers. Since swallows are strongly attracted to old nests or remnants of nests, all traces of mud should be removed. After all old nests have been removed, exclusionary netting with a diameter of ¾ inches or less (high-density, ultra-violet stabilized polyethylene twine) shall be installed on the underside of the existing bridge structure and extend 3 to 4 inches from the sides of the bridge so as to prevent swallows from gaining access.

SF-12b: While the contractor will have flexibility in how to install the exclusionary netting, the following methodology has been used with some recent success on large-scale bridge projects:

- Attach netting to the bridge with a strong cable system secure to the bridge with concrete anchors.
- If necessary, a separate cable support system may be used for each section between piers and panel of netting.
- Each net panel should wrap from the top ledge on the side of the bridge structure down to the top of the piers.
- The net should then go under the bridge structure and back up to the other side to the same location on the opposite rail.
- Turnbuckles and immediate fasteners should be placed within each separate panel to keep the netting tight against the wall.
- Care should be taken along the top railing where the netting is attached to prevent any tampering.

SF-12c: The netting shall be left in place until July 31st and monitored daily, especially during the onset of swallow nesting behavior when nest-building activities are the most intense. Any foundational nest material that may develop on either netting attached tightly to the bridge or on un-netted areas of the bridge (i.e., pier walls) shall be removed daily. Any deficiencies in the netting system (i.e., tears, unsecured areas) shall be repaired as soon as possible following observation. To avoid a take under the MBTA, nests shall be knocked down with poles or scrapers or washed off before they are 1/3 complete.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-13: Construction activities associated with the proposed Trinity River Bridges Project could result in the loss of bald eagle, golden eagle, and osprey foraging and perching habitat. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, construction-related impacts to bald eagle, golden eagle, and osprey nesting, foraging, and perching habitat would not occur.

Proposed Action (Replacement Downstream, Private Ownership)

The Trinity River riparian corridor, including the Salt Flat ESL, provides both foraging and perching habitat for bald eagle, golden eagle, and osprey. Adjacent Klamath mixed-conifer and montane hardwood conifer habitat provides suitable nesting habitat for all three species, although existing traffic noise disturbance in the project area would preclude nesting by these species within the project vicinity. The nearest known bald eagle nesting site is a single

occurrence located approximately two miles upstream on Lewiston Lake. No known golden eagle or osprey nests occur in the project area. Tree snags suitable for perching are located along the Trinity River. Construction activities associated with the Proposed Action could temporarily alter foraging patterns of these species; however, this would be considered less than significant based on the abundance of suitable foraging habitat in the vicinity of the project area. No long-term impediments to foraging habitat within the Salt Flat ESL are anticipated. The loss of potential perch trees would not affect the abundance of these species or their use of the Trinity River for foraging habitat.

Alternative 1 (Replacement Upstream, Private Ownership)

Construction-related impacts to bald eagle, golden eagle, and osprey nesting, foraging, and perching habitat associated with Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction-related impacts to bald eagle, golden eagle, and osprey nesting, foraging, and perching habitat associated with Alternative 2 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1; Alternative 2

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-14: Construction activities associated with the proposed Trinity River Bridges Project could result in the disruption of active bat roosts. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action, Alternative 1, and Alternative 2.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Salt Flat site, construction-related impacts to active bat roosts would not occur.

Proposed Action (Replacement Downstream, Private Ownership)

As previously discussed, special-status bat species with potential to occur in the project area include pale Townsend's big eared bat, small-footed myotis bat, long-eared myotis bat, fringed myotis bat, long-legged myotis, and Yuma myotis bat. Suitable roosting and foraging habitat for these species is present at the Salt Flat site, although the species were not detected in the Salt Flat ESL during the 2002 field surveys.

Construction activities associated with the Proposed Action may result in the temporary disruption of bat roosting habitat. The temporary loss of potential roosting habitat is not considered a significant impact since other potential roosting habitat is available within the project region. No permanent loss of bat roosting habitat would occur as a result of the proposed project.

Alternative 1 (Replacement Upstream, Private Ownership)

Construction-related impacts to active bat roosts associated with Alternative 1 would be similar to the Proposed Action.

Alternative 2 (Replacement Upstream, Public Ownership)

Construction-related impacts to active bat roosts associated with Alternative 2 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1; Alternative 2

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Bucktail Bridge

Impact 3.7-1: Construction activities associated with the proposed Trinity River Bridges Project would result in the loss of upland plant communities. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, no construction-related impacts to biological resources would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Table 3.7-7 indicates the total acreage of permanent and temporary impacts to upland plant communities as a result of raising the right (west) approach roadway and replacing the existing culvert located to the west of the existing Bucktail Bridge (the Proposed Action).

The permanent loss of 0.443 acre and temporary impact to 2.16 acres of upland habitat, including urban lands (i.e., roads, quarry) is not considered significant due to the relative abundance of these upland plant community types in the project area.

Alternative 1 (Raise Existing Upstream Levee)

Table 3.7-7 indicates the total acreage of permanent and temporary impacts to upland plant communities as a result of raising the levee located upstream of the existing Bucktail Bridge (Alternative 1). The permanent loss of 0.16 acre and temporary impact to 1.87 acres of upland habitat is not considered significant due to the relative abundance of these upland plant community types in the project area.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-2: Construction of the Trinity River Bridges Project could result in the loss of individuals of a special-status plant species. ***No Impact for the No-Action Alternative, Proposed Action and Alternative 1.***

TABLE 3.7-7
EXPECTED AREA OF DISTURBANCE TO UPLAND PLANT COMMUNITIES WITHIN THE BUCKTAIL PROJECT STUDY AREA: PROPOSED ACTION AND PROJECT ALTERNATIVES

Upland Plant Community Type	Approximate Area of Disturbance (Acres)			
	Proposed Action		Alternative 1	
	Temporary	Permanent	Temporary	Permanent
Montane Hardwood-Conifer	0.66	0.003	0.43	0.03
Montane Riparian[2] - Upland	0.35	0.03	0.51	0.13
Road / Quarry	1.15	0.41	0.93	0
Total	**2.16**	**0.443**	**1.87**	**0.16**

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, no construction-related impacts to a special-status plant species would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert); Alternative 1 (Raise Existing Levee)

The entire Bucktail ESL was surveyed for special-status plant species in 2002. No special-status plants were detected within the Bucktail ESL.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-3: Construction activities associated with the proposed Trinity River Bridges Project could result in the loss of jurisdictional wetlands. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, no loss of jurisdictional wetlands would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

[2] In some instances, montane riparian habitat occurs in upland areas. This community type, while comprised of similar plant species as montane riparian wetlands, does not meet two of the three Corps criteria for being classified as a jurisdictional water (i.e., lacking hydrology and hydric soils indicators).

A delineation of potential jurisdictional wetlands and other waters of the U.S. within the Bucktail Bridge ESL (following the methodology identified in the 1987 Corps guidelines) was conducted by NSR on July 16-18 and July 23-24, 2002. A total of 4.78 acres of potential jurisdictional waters, comprised of 1.70 acres of riverine (other waters), 0.10 acre of fresh emergent wetland, 2.22 acres of riparian wetland, 0.46 acre of seasonal wet meadow, and 0.30 acre of riparian wet meadow habitat were mapped within the ESL. The Corps verified these acreages on March 25, 2003. **Table 3.7-8** lists wetland impacts for the Proposed Action and each project alternative.

TABLE 3.7-8
EXPECTED AREA OF DISTURBANCE TO JURISDICTIONAL WATERS WITHIN THE BUCKTAIL PROJECT STUDY AREA: PROPOSED ACTION AND PROJECT ALTERNATIVES

Wetland Type	Approximate Area of Disturbance (Acres)			
	Proposed Action		Alternative 1	
	Temporary	Permanent	Temporary	Permanent
Fresh Emergent Wetland	0.037	0	0	0
Riparian Wetland (Montane Riparian)	0.081	0	0.115	0
Seasonal Wet Meadow	0.165	0.003	0.037	0
Riparian Wet Meadow	0	0	0.018	0.002
Riverine	0.014	0	0.007	0
Total	**0.297**	**0.003**	**0.177**	**0.002**

Construction activities associated with the Proposed Action will result in both permanent and temporary effects to jurisdictional wetland features located within the Bucktail ESL. Construction activities associated with the Proposed Action would result in the permanent loss of 0.003 acre of seasonal wet meadow. Impacts to SRA habitat are analyzed in Section 3.6, Fishery Resources. Construction access and staging would temporarily disturb 0.283 acre of wetlands (fresh emergent wetland, riparian wetland, and seasonal wet meadow) and 0.014 acre of "other waters" (i.e., riverine habitat). Both permanent and temporary impacts to jurisdictional wetlands would be considered significant.

Alternative 1 (Raise Existing Levee)

Construction activities associated with Alternative 1 will result in both permanent and temporary effects to jurisdictional wetland features located within the Bucktail ESL. Project construction associated with Alternative 1 would result in the permanent loss of 0.002 acre of riparian wet meadow. Construction access and staging would temporarily disturb 0.170 acre of wetlands (riparian wetland, riparian wet meadow, and seasonal wet meadow) and 0.007 acre of "other waters" (i.e., riverine habitat). Both permanent and temporary impacts to jurisdictional wetlands would be considered significant.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

BT-3a: Prior to the start of construction activities, the BOR shall retain a qualified biologist to identify construction access routes within the project area to ensure that these features avoid and/or minimize to the fullest extent impacts to jurisdictional waters. In addition, jurisdictional waters shall be clearly identified in the construction drawings along with specific instructions to avoid any construction activity within these features.

BT-3b: To address temporary impacts to wetland features, the following mitigation would be implemented within all staging sites and construction access areas, which traverse natural areas, during construction activities:

- Conduct all construction and staging activities across wetland features during the dry season (typically May through October) to the fullest extent feasible.
- Place sediment curtains upstream and downstream of the construction limits to prevent sediment disturbed during ground-disturbing activities from being transported and deposited outside of the construction limits.
- Locate spoil sites such that they do not drain directly into wetland features, to the fullest extent possible. If a spoil site drains into a wetland feature, catch basins would be constructed to intercept sediment before it reaches the wetland feature. Spoil sites would be flattened and mulched to reduce the potential for erosion.
- Store equipment and materials away from all wetland features. No contaminants or other debris would be deposited within 25 feet of the drainages and wetland areas.
- Upon completion of construction activities, any impacted wetland area shall be returned to original grade. The upper 6" to 12" of topsoil should be maintained and used as backfill following installation of new sewer line. Any wetland area left bare following construction would be revegetated using plugs of rushes, sedges, or other native vegetation taken by hand from plants in adjacent wetland habitat (i.e., seasonal wet meadow, fresh emergent wetland).

BT-3c: If permanent filling of jurisdictional wetlands is required during the construction of any phase of the proposed Project, mitigation would be required. Mitigation at a 2:1 ratio will ensure that there is no net-loss of wetlands as a result of the project. For the Proposed Action, since 0.003 acre of seasonal wet meadow would be filled, 0.006 acre of new seasonal wet meadow shall be created. For Alternative 1, since 0.002 acre of riparian wet meadow would be filled, 0.004 acre of new riparian wet meadow shall be created.

On-site mitigation is encouraged by these two resource agencies and would need to be implemented if feasible. A Wetlands Mitigation and Monitoring Plan would be prepared and provided to the Corps and the CDFG for review and approval. The Wetlands Mitigation and Monitoring Plan would identify the monitoring parameters and performance criteria for each parameter. Typical performance criteria may include:

- The target number of hydrophytic plant species to be established in the mitigation area shall be the average number of obligate, facultative wetland, and facultative species that occur in adjacent reference wetlands. Reference wetlands will be identified in consultation with the Corps.
- The percent cover of obligate, facultative wetland, and facultative species within the mitigation area shall not be less than 80 percent of the average percent cover occurring in the reference wetlands.
- No visible erosion of topsoil shall occur within the wetland mitigation area.
- Water depths, periods of inundation, and soil saturation in the mitigation area shall be similar to conditions occurring in the reference wetlands.
- If the performance criteria are not satisfied by the end of the fourth spring following construction of mitigation area, remediation measures shall be identified and implemented. At a minimum, the monitoring program would consist of the filing of an annual report to both agencies for five years. The mitigation would be considered successful if criteria are met for three consecutive years. The BOR or their appointed agent would maintain the mitigation site in perpetuity.

BT-3d: For riparian wetland (montane riparian) habitat, the BOR shall develop and implement a revegetation plan to mitigate for both temporary and permanent impacts that would occur as a result of implementing the proposed project. The revegetation plan should identify appropriate mitigation for impacts (i.e., based on 3:1 ratio for project impacts), describe planting techniques and locations (onsite and offsite), and incorporate planting of native species that would resist invasion of noxious plant species. The revegetation plan shall be developed in consultation with the Corps, NMFS and CDFG. Following completion of construction activities, plantings shall be installed to replace all riparian trees and shrubs (by species) that were removed as a result of construction (temporary and permanent impacts). Replacement shall occur at a ratio of 3:1 per woody riparian species removed as a result of project construction activities. Replacement trees and shrubs should be planted in the appropriate season (i.e., spring or fall) following the completion of construction. Propagules (i.e., shrub cuttings, trees seedlings) shall be obtained either onsite or from a local nursery and planted along the Trinity River within the immediate Project ESL. Additional planting may need to occur at on off-site location depending on available opportunities for mitigation within and adjacent to the Project ESL. The BOR or their contractor shall monitor the plantings annually for up to five years to ensure that trees and shrubs have become established. Supplemental planting would be conducted, as necessary, to ensure that the performance standard is met. Once riparian wetlands mitigation has been successfully completed, the BOR shall submit a memorandum to the Corps, CDFG, and NMFS documenting the results. *Note: This measure may be conducted in conjunction with Measures BT-6a through BT-6d (Loss of Shaded Riverine Aquatic Habitat), as discussed in Section 3.6, Fishery Resources.*

Significance After Mitigation: *Less than Significant.*

Impact 3.7-4: Construction activities associated with the proposed Trinity River Bridges Project could disrupt active raptor nests. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, no construction-related impacts to active raptor nests would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Noise and visual disturbance associated with construction activities occurring during the nesting season (March through July) can disrupt nesting raptors that would lead to nest abandonment and nest failure. Raptor species such Cooper's hawk and sharp-shinned hawk which are designated as State species of concern, as well as red-tailed hawk, red-shouldered hawk, American kestrel, great horned owl, and barn owl are all known to occur and nest throughout the Trinity River corridor. Particular nesting habitat preferred by these species that is present within or adjacent to the Bucktail ESL includes montane hardwood-conifer and montane riparian (upland) habitat.

Although the raptor species mentioned above are not afforded full protection under the ESA, it is considered unlawful to take, possess, or destroy the nest or eggs of any birds pursuant to Section 3503.5 of the Fish and Game Code of California and the MBTA (16 USC 703-711). As a result, any loss or disturbance to these nesting raptor species would be considered a significant impact.

Alternative 1 (Raise Existing Levee)

Construction-related impacts to active raptor nests associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

BT-4a: All vegetation (i.e., trees, shrubs) that will need to be removed within the project construction limits shall be removed between September 1st and March 1st (i.e., outside the nesting season for raptor species) to ensure that active raptor nest trees are not removed as a result of project construction activities. Vegetation removal activities shall be limited to ground-level cuttings and should not result in root removal or other ground-disturbances to avoid the potential for erosion and sedimentation. If all vegetation removal has been completed between September 1st and March 1st, no pre-construction surveys would be required.

BT-4b: If vegetation removal cannot be accomplished between September 1st and March 1st, the BOR shall retain a qualified biologist to conduct a minimum of one survey (subsequent surveys would be separated by at least one week) for nesting raptors, including Cooper's hawk and sharp-shinned hawk, within a 500-foot radius around proposed construction activities. Active raptor nests located within 500 feet of construction activities shall be mapped, where practicable and feasible. If active nests are identified within the construction disturbance area, they may only be removed prior to March 1st, or after the young have fledged (based on field verification). A qualified biologist shall monitor the nest(s) to determine when the young have fledged and submit status reports to the CDFG, as appropriate, throughout the nesting season. Nest tree removal shall only be performed in consultation with, and with pre-approval from the CDFG.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-5: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to nesting individuals of yellow warbler and yellow-breasted chat. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, no construction-related impacts to nesting individuals of yellow warbler and yellow-breasted chat would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Potential nesting habitat for yellow warbler and yellow-breasted chat is present within the riparian habitat associated with the Trinity River corridor and suitable nesting habitat (i.e., montane riparian - upland) is found within the ESL. Both of these species are designated as Species of Special Concern by the CDFG. Even though no recorded nest sites for yellow warbler or yellow-breasted chat in the project vicinity were identified by the CNDDB (2002d), there is potential for the two species to nest within the Project ESL based on available habitat. The proposed project would require the removal of adjacent riparian vegetation, and noise associated with construction activities also could disturb individuals nesting directly adjacent to the project site. These species are protected by both the MBTA (16 USC 703-711) and the California Fish and Game Code (Sections 3503 and 3513). Essentially, these regulatory provisions consider it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird species designated in the MBTA. As a result, any loss of or disturbance to a nesting yellow warbler or yellow-breasted chat nest would be considered significant.

Alternative 1 (Raise Existing Levee)

Construction-related impacts to nesting individuals of yellow warbler and yellow-breasted chat associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

BT-5a: All vegetation (i.e., trees, shrubs) that will need to be removed within the construction limits shall be removed between September 1st and March 1st (i.e., outside of the nesting season for yellow warbler and yellow-breasted chat) to ensure that active nest trees are not removed as a result of project construction activities. Vegetation removal activities shall be limited to ground-level cuttings and will not include root removal or other ground-disturbing activities, to avoid potential erosion and sedimentation. If all vegetation removal activities are completed between September 1st and March 1st, no pre-construction surveys would be required.

BT-5b: If vegetation removal cannot be accomplished between September 1st and March 1st, the BOR shall retain a qualified biologist to conduct a minimum of one survey (subsequent surveys would be separated by at least one week) for yellow warbler and yellow-breasted chat within a 500-foot radius around proposed

construction limits. Active nests for each species that are located within 500 feet of construction activities shall be mapped, where practicable and feasible. If active nest trees are identified within the construction disturbance zone, they may only be removed prior to March 1st, or after the young have fledged (based on field verification). A qualified biologist shall monitor the nest to determine when the young have fledged and submit status reports to the CDFG throughout the nesting season. Nest tree removal shall only be performed in consultation with, and with pre-approval from the CDFG.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-6: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to northern spotted owl. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, no construction-related impacts to northern spotted owl would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Suitable nesting, roosting, foraging, and dispersal habitat for northern spotted owl is not located in the project study area. As previously discussed, there are ten known occurrences of northern spotted owl within 2 to 6 miles of the project. Since nesting territories are located beyond the standard exclusionary zones (i.e., within 1.3 miles from a known spotted owl activity center or designated critical habitat) currently recommended to prevent adverse impacts to this species that may occur as a result of construction activities (D. Wineberg, BLM, and T. Quinn, STNF, personal communication, 2002), no significant impacts to these nesting territories would occur.

Alternative 1 (Raise Existing Levee)

Construction-related impacts to northern spotted owl associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-7: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to little willow flycatcher. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, no construction-related impacts to little willow flycatcher would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

Montane riparian (upland) habitat within the Bucktail ESL provides suitable nesting and foraging habitat for little willow flycatcher, although no little willow flycatchers were observed during the 2002 field surveys. Though no nesting individuals have been observed near the project site, there is the potential for new nesting territories to become established within the Bucktail ESL in subsequent nesting seasons, prior to the start of construction. Disturbance from traffic and equipment operation, and personnel activities during the breeding season (March-July) could result in nest failure or abandonment. There is also a potential for the direct loss of active or potential nest trees or shrubs during site preparation.

Alternative 1 (Raise Existing Levee)

Construction-related impacts to little willow flycatcher associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

The following mitigation measures shall be implemented to avoid/minimize potential impacts to little willow flycatcher:

BT-7a: If construction is proposed between the months of April and August, a protocol-level survey for willow flycatchers within 500 feet of the construction limits shall be conducted during the spring prior to construction. If no active nests are observed, construction may proceed. If construction activities are to occur between September and March, no surveys would be required. A letter report that summarizes the survey results shall be submitted to the CDFG.

BT-7b: All vegetation (i.e., trees, shrubs) that will need to be removed within the construction limits (including the temporary construction access routes) shall be removed between September 1st and March 1st (i.e., outside the nesting season for willow flycatcher) to ensure that active nest trees are not removed as a result of project construction activities.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-8: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to BLM sensitive species and Northwest Forest Plan Survey and Manage species. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, no construction-related impacts to BLM sensitive species or Northwest Forest Plan Survey and Manage species would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

As previously discussed, surveys for BLM sensitive and Survey and Manage species were conducted within the entire Bucktail ESL during the spring and summer of 2002. No Survey and Manage vascular plant species or cryptogamic species were present, and no appropriate habitat for these species was identified within those portions of the Bucktail ESL located on public lands. None of the three BLM sensitive species with potential to occur within the Bucktail study area were identified during the focused surveys.

Pre-disturbance surveys for mollusks were conducted within the Bucktail ESL during the spring and fall of 2002. The Bucktail Bridge ESL was determined to be unsuitable for mollusk habitat. Ten of the wildlife species with potential to occur within the Bucktail study area (foothill yellow-legged frog, northwestern pond turtle, golden eagle, Pacific fisher, Pale Townsend's big-eared bat, and small-footed myotis, long-eared myotis, fringed myotis, long-legged myotis, and Yuma myotis bats) are designated BLM Sensitive species. The implementation of mitigation measures BT-9, BT-10, BT-11, BT-13, and BT-14 (discussed later in this section), will reduce potential impacts to these species to a less than significant level.

Alternative 1 (Raise Existing Levee)

Construction-related impacts to BLM sensitive species or Survey and Manage species associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-9: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to foothill yellow-legged frog. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, no construction-related impacts to foothill yellow-legged frog would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

The Bucktail ESL provides suitable habitat for foothill yellow-legged frog, although the species was not observed during field surveys conducted in 2002. Construction activities associated with the Proposed Action may impact foothill yellow-legged frogs indirectly, but direct effects (i.e., mortality of individuals due to equipment and vehicle traffic, disturbance of boulders or cobbles that support egg masses, and the loss of riparian vegetation cover) are unlikely because the Proposed Action will occur west of the Trinity River, outside of suitable habitat for this species. The species may be indirectly affected if construction activities result in degradation of aquatic habitat and water quality due to erosion and sedimentation, accidental fuel leaks, and spills. Construction activities associated with the Proposed Action could potentially result in significant adverse impacts to foothill yellow-legged frog and mitigation is required.

Alternative 1 (Raise Existing Levee)

Construction-related impacts to foothill yellow-legged frog associated with Alternative 1 would be greater than the Proposed Action due to the proximity of Alternative 1 construction to suitable foothill yellow-legged frog habitat. Construction activities associated with Alternative 1 may impact foothill yellow-legged frogs directly and indirectly. Direct effects include mortality of individuals due to equipment and vehicle traffic, disturbance of boulders or cobbles that support egg masses, and the loss of riparian vegetation cover. The species may also be indirectly affected if construction activities result in degradation of aquatic habitat and water quality due to erosion and sedimentation, accidental fuel leaks, and spills. Construction activities associated with Alternative 1 could potentially result in significant adverse impacts to foothill yellow-legged frog and mitigation is required.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

BT-9a: If any construction within the Trinity River channel will occur prior to August 1st of any construction season, a pre-construction survey for yellow-legged frog larvae and/or eggs shall be conducted by a qualified biologist. This survey would need to be conducted within the construction limits no more than two weeks prior to the start of in-stream construction activities. If larvae or eggs are detected, the biologist shall relocate them to a suitable location outside of the construction limits.

BT-9b: In the event that a yellow-legged frog is observed within the construction limits, the contractor shall temporarily halt in-stream construction activities until the frog has been moved to a safe location outside of the construction limits, within similar habitat.

BT-9c: Mitigation measures presented in Section 3.5 (Water Quality) for addressing erosion and sedimentation and accidental spills shall be fully implemented to mitigate for the potential indirect impacts to potential dispersal habitat due to sedimentation and accidental spills.

BT-9d: Mitigation measures associated with the disturbance to riparian habitat are discussed previously in this section under impacts to jurisdictional wetlands (Mitigation Measure BT-3), and will be fully implemented.

Significance after Mitigation: *Less than Significant*

Impact 3.7-10: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to northwestern pond turtle. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, no construction-related impacts to northwestern pond turtle would occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

The Bucktail ESL provides suitable habitat for northwestern pond turtle, although the species was not observed during the 2002 field surveys. Construction activities associated with the Proposed Action, particularly activities associated with the culvert replacement, may impact pond turtles directly and indirectly. Direct effects include mortality of individuals due to equipment and vehicle traffic, disturbance to nests in upland areas, and the loss of riparian vegetation cover. The species may also be indirectly affected if construction activities result in degradation of aquatic habitat and water quality due to erosion and sedimentation, accidental fuel leaks, and spills. Construction activities associated with the Proposed Action could potentially result in significant adverse impacts to northwestern pond turtle and mitigation is required.

Alternative 1 (Raise Existing Levee)

Construction-related impacts to northwestern pond turtle associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

BT-10a: A minimum of one survey for pond turtle nests shall be conducted a maximum of one week prior to construction. A qualified biologist shall be retained by the BOR to conduct the survey. If a pond turtle nest is found, the biologist shall flag the site and determine if construction activities can avoid impacting the nest. If the nest cannot be avoided, the nest should be excavated by the biologist and reburied at a suitable location outside of the construction limits.

BT-10b: In the event that a pond turtle is observed within the construction limits, the contractor shall temporarily halt in-stream construction activities until the turtle has been moved to a safe location outside of the construction limits, within similar habitat.

BT-10c: Mitigation measures presented in Section 3.5 (Water Quality) for addressing erosion and sedimentation and accidental spills shall be fully implemented to mitigate for the potential indirect impacts to potential dispersal habitat due to sedimentation and accidental spills.

BT-10d: Mitigation measures associated with the disturbance to riparian habitat are discussed previously in this section under impacts to jurisdictional wetlands (Mitigation Measure BT-3), and will be fully implemented.

Significance after Mitigation: *Less than Significant*

Impact 3.7-11: Construction activities associated with the proposed Trinity River Bridges Project could restrict terrestrial wildlife movement through the Project ESL. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, construction-related restriction of terrestrial wildlife movement through the Project ESL would not occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

The Trinity River corridor provides habitat and travel corridors for such species as Pacific fisher, California wolverine, American marten, black-tailed deer, river otter, beaver, common mergansers, green heron, black-crowned night heron, wood duck, belted kingfisher, cliff swallows, bank swallows and raccoons. The riparian vegetation along the Trinity River, in association with adjacent Klamath mixed conifer and montane hardwood-conifer habitat, provides connected habitat within an area that has been fragmented by rural residential development and road building. Black-tailed deer inhabit shrublands, forests, and oak woodlands and utilize riparian vegetation for cover. Construction noise could temporarily alter foraging patterns of resident wildlife species, however, no long-term impediments to wildlife movement within the Project ESL are anticipated as a result of implementing the Proposed Action since the project site currently supports an existing roadway and levee.

Alternative 1 (Raise Existing Levee)

Construction-related impacts to terrestrial wildlife movement associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-12: Construction activities associated with the proposed Trinity River Bridges Project could disrupt active swallow nests. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, construction-related impacts to active swallow nests would not occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

The existing Bucktail bridge structure is currently used as a nesting site by cliff swallows but is not currently used by barn swallows, both of which are protected by the MBTA (CDFG Code Section 3513). In addition to the nesting individuals that were observed in 2002, there is the potential for new nests to become established under the existing structure in subsequent nesting seasons, prior to the start of construction. No construction activities associated with the existing bridge structure have been proposed under the Proposed Action.

Alternative 1 (Raise Existing Levee)

Construction-related impacts to active swallow nests associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative, Proposed Action, Alternative 1

Since no significant impacts were identified, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-13: Construction activities associated with the proposed Trinity River Bridges Project could result in the loss of bald eagle, golden eagle, and osprey foraging and perching habitat. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, construction-related impacts to bald eagle, golden eagle, and osprey nesting, foraging, and perching habitat would not occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

The Trinity River riparian corridor, including the Bucktail ESL, provides both foraging and perching habitat for bald eagle, golden eagle, and osprey. Adjacent Klamath mixed-conifer and montane hardwood conifer habitat provides suitable nesting habitat for all three species, although existing traffic noise disturbance in the project area would preclude nesting by these species within the project vicinity. The nearest known bald eagle nesting site is a single occurrence located approximately three miles upstream on Lewiston Lake. No known golden eagle or osprey nests occur in the project area. Tree snags suitable for perching are located along the Trinity River. Construction activities associated with the Proposed Action could temporarily alter foraging patterns of these species; however, this would be considered less than significant based on the abundance of suitable foraging habitat in the vicinity of the project site. No long-term impediments to foraging habitat within the Bucktail ESL are anticipated. The loss of potential perch trees would not affect the abundance of these species or their use of the Trinity River for foraging habitat.

Alternative 1 (Raise Existing Levee)

Construction-related impacts to bald eagle and osprey nesting, foraging, and perching habitat associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-14: Construction activities associated with the proposed Trinity River Bridges Project could result in the disruption of active bat roosts. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the west approach roadway and the existing culvert will not be replaced at the Bucktail site, construction-related impacts to active bat roosts would not occur.

Proposed Action (Raised Right Approach Roadway and New Arch Culvert)

As previously discussed, special-status bat species with potential to occur in the project area include pale Townsend's big eared bat, small-footed myotis bat, long-eared myotis bat, fringed myotis bat, long-legged myotis, and Yuma myotis bat. Suitable roosting and foraging habitat for these species is present at the Bucktail site, specifically the underside of the bridge, although the species were not detected in the Bucktail ESL during the 2002 field surveys. Since no construction activities associated with the existing bridge structure have been proposed under the Proposed Action, no effects to active roosts would occur as a result of the project.

Alternative 1 (Raise Existing Levee)

Construction-related impacts to active bat roosts associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Poker Bar Bridges

Impact 3.7-1: Construction activities associated with the proposed Trinity River Bridges Project would result in the loss of upland plant communities. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, no construction-related impacts to biological resources would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Table 3.7-9 indicates the total acreage of permanent and temporary impacts to upland plant communities as a result of constructing new bridges upstream of the existing Poker Bar Bridges (the Proposed Action).

The permanent loss of 0.252 acre and temporary impact to 1.902 acres of upland habitat, including urban habitat, is not considered significant due to the relative abundance of these upland plant community types in the project area.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Table 3.7-9 indicates the total acreage of permanent and temporary impacts to upland plant communities as a result of constructing new bridges downstream of the existing Poker Bar Bridges (Alternative 1). The permanent loss of 0.880 acre (including urban habitats) and temporary impact to 1.879 acres of upland habitat is not considered significant due to the relative abundance of these upland plant community types in the project area.

TABLE 3.7-9
EXPECTED AREA OF DISTURBANCE TO UPLAND PLANT COMMUNITIES WITHIN THE POKER BAR PROJECT STUDY AREA: PROPOSED ACTION AND PROJECT ALTERNATIVES

Upland Plant Community Type	Approximate Area of Disturbance (Acres)			
	Proposed Action		Alternative 1	
	Temporary	Permanent	Temporary	Permanent
Montane Hardwood-Conifer	0.222	0.062	0.266	0.148
Montane Riparian[3] - Upland	0.963	0.149	0.836	0.463
Human Disturbance/Road	0.717	0.041	0.777	0.269
Total	**1.902**	**0.252**	**1.879**	**0.880**

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-2: Construction of the Trinity River Bridges Project could result in the loss of individuals of a special-status plant species. ***No Impact for the No-Action Alternative, Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, no construction-related impacts to a special-status plant species would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures); Alternative 1 (Replacement Downstream with Two Single-Span Structures)

The entire Poker Bar ESL was surveyed for special-status plant species in 2002. No special-status plants were detected within the Poker Bar ESL.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

[3] In some instances, montane riparian habitat occurs in upland areas. This community type, while comprised of similar plant species as montane riparian wetlands, does not meet two of the three Corps criteria for being classified as a jurisdictional water (i.e., lacking hydrology and hydric soils indicators).

Significance after Mitigation: N/A.

Impact 3.7-3: Construction activities associated with the proposed Trinity River Bridges Project could result in the loss of jurisdictional wetlands. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, no loss of jurisdictional wetlands would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

A delineation of potential jurisdictional wetlands and other waters of the U.S. within the Poker Bar Bridges ESL (following the methodology identified in the 1987 Corps guidelines) was conducted by NSR on July 16-18 and July 23-24, 2002. A total of 1.57 acres of potential jurisdictional waters, comprised of 0.84 acres of riverine (other waters) and 0.73 acre of riparian wetland habitat, were mapped within the ESL. The Corps verified these acreages on March 25, 2003. **Table 3.7-10** lists wetland impacts for the Proposed Action and each project alternative.

TABLE 3.7-10
EXPECTED AREA OF DISTURBANCE TO JURISDICTIONAL WATERS WITHIN THE POKER BAR PROJECT STUDY AREA: PROPOSED ACTION AND PROJECT ALTERNATIVES

Wetland Type	Approximate Area of Disturbance (Acres)			
	Proposed Action		Alternative 1	
	Temporary	Permanent	Temporary	Permanent
Riparian Wetland (Montane Riparian)	0.134	0.055	0.086	0.04
Riverine	0.230	0	0.227	0
Total	**0.364**	**0.055**	**0.313**	**0.04**

Construction activities associated with the Proposed Action will result in both permanent and temporary effects to jurisdictional wetland features located within the Poker Bar ESL. Construction of the Proposed Action would result in the permanent loss of 0.055 acre of riparian wetland. Impacts to SRA habitat are analyzed in Section 3.6, Fishery Resources. Construction access routes and staging would temporarily disturb 0.134 acre of riparian wetland and 0.230 acre of riverine habitat. Both permanent and temporary impacts to jurisdictional wetlands would be considered significant.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction activities associated with Alternative 1 will result in both permanent and temporary effects to jurisdictional wetland features located within the Poker Bar ESL. Project construction associated with Alternative 1 would result in the permanent loss of 0.040 acre of riparian wetland. Construction access and staging would temporarily disturb 0.086 acre of riparian wetland and 0.227 acre of riverine habitat. Both permanent and temporary impacts to jurisdictional wetlands would be considered significant.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

PB-3a: Prior to the start of construction activities, the BOR shall retain a qualified biologist to identify construction access routes within the project area to ensure that these features avoid and/or minimize to the fullest extent impacts to jurisdictional waters. In addition, jurisdictional waters shall be clearly identified in the construction drawings along with specific instructions to avoid any construction activity within these features. Each jurisdictional feature proposed to be avoided will be flagged, staked, or otherwise marked to ensure that construction activities do not encroach upon these features. The exclusionary fencing shall be inspected and maintained on a regular basis throughout the project construction phase.

PB -3b: To mitigate for a loss of jurisdictional waters habitat, specifically riparian wetland (montane riparian), the Project would be designed to avoid and minimize losses to wetland vegetation within the Project ESL to the fullest extent feasible. When loss of riparian wetland is unavoidable, the BOR will conduct mitigation at a ratio of 3:1 per woody riparian plant species for habitat temporarily affected and permanently lost due to project construction activities.

PB -3c: For riparian wetland (montane riparian) habitat, following completion of construction activities, plantings shall be installed to replace all riparian trees and shrubs (by species) that were removed as a result of construction (temporary and permanent impacts). Replacement shall occur at a ratio of 3:1 per woody riparian species removed as a result of project construction activities. Replacement trees and shrubs should be planted in the appropriate season (i.e., spring or fall) following the completion of construction. Propagules (i.e., shrub cuttings, trees seedlings) shall be obtained either onsite or from a local nursery and planted along the Trinity River within the immediate Project ESL. Additional planting may need to occur at on off-site location, depending on available opportunities for mitigation within and adjacent to the Project ESL. The BOR or their contractor shall monitor the plantings annually for up to five years to ensure that trees and shrubs have become established. Supplemental planting would be conducted, as necessary, to ensure that the performance standard is met. Once riparian wetlands mitigation has been successfully completed, the BOR shall submit a memorandum to the Corps, CDFG, and NMFS documenting the results. *Note: This measure may be conducted in conjunction with Measures PB-6a through PB-6d (Loss of Shaded Riverine Aquatic Habitat), as discussed in Section 3.6, Fishery Resources.*

Significance After Mitigation: *Less than Significant.*

Impact 3.7-4: Construction activities associated with the proposed Trinity River Bridges Project could disrupt active raptor nests. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, no construction-related impacts to active raptor nests would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Noise and visual disturbance associated with construction activities occurring during the nesting season (March through July) can disrupt nesting raptors that would lead to nest abandonment and nest failure. Raptor species such Cooper's hawk and sharp-shinned hawk which are designated as state species of concern, as well as red-tailed hawk, red-shouldered hawk, American kestrel, great horned owl, and barn owl are all known to occur and nest throughout the Trinity River corridor. Particular nesting habitat preferred by these species that is present within or adjacent to the Poker Bar ESL includes montane hardwood-conifer and montane riparian (upland) habitat.

Although the raptor species mentioned above are not afforded full protection under the ESA, it is considered unlawful to take, possess, or destroy the nest or eggs of any birds pursuant to Section 3503.5 of the Fish and Game Code of California and the MBTA (16 USC 703-711). As a result, any loss or disturbance to these nesting raptor species would be considered a significant impact.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction-related impacts to active raptor nests associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

PB-4a: All vegetation (i.e., trees, shrubs) that will need to be removed within the project construction limits shall be removed between September 1st and March 1st (i.e., outside the nesting season for raptor species) to ensure that active raptor nest trees are not removed as a result of project construction activities. Vegetation removal activities shall be limited to ground-level cuttings and should not result in root removal or other ground-disturbances to avoid the potential for erosion and sedimentation. If all vegetation removal has been completed between September 1st and March 1st, no pre-construction surveys would be required.

PB-4b: If vegetation removal cannot be accomplished between September 1st and March 1st, the BOR shall retain a qualified biologist to conduct a minimum of one survey (subsequent surveys would be separated by at least one week) for nesting raptors, including Cooper's hawk and sharp-shinned hawk, within a 500-foot radius around proposed construction activities. Active raptor nests located within 500 feet of construction activities shall be mapped, where practicable and feasible. If active nests are identified within the construction disturbance area, they may only be removed prior to March 1st, or after the young have fledged (based on field verification). A qualified biologist shall monitor the nest(s) to determine when the young have fledged and submit status reports to the CDFG, as appropriate, throughout the nesting season. Nest tree removal shall only be performed in consultation with, and with pre-approval from the CDFG.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-5: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to nesting individuals of yellow warbler and yellow-breasted chat. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, no construction-related impacts to nesting individuals of yellow warbler and yellow-breasted chat would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Potential nesting habitat for yellow warbler and yellow-breasted chat is present within the riparian habitat associated with the Trinity River corridor and suitable nesting habitat is found within the ESL. Both of these species are designated as Species of Special Concern by the CDFG. Even though no recorded nest sites for yellow warbler or yellow-breasted chat in the project vicinity were identified by the CNDDB (2002d), there is potential for the two species to nest within the Project ESL based on available habitat. The proposed project would require the removal of adjacent riparian vegetation, and noise associated with construction activities also could disturb individuals nesting directly adjacent to the project site. These species are protected by both the MBTA (16 USC 703-711) and the California Fish and Game Code (Sections 3503 and 3513). Essentially, these regulatory provisions consider it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird species designated in the MBTA. As a result, any loss of or disturbance to a nesting yellow warbler or yellow-breasted chat nest would be considered significant.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction-related impacts to active raptor nests associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

PB-5a: All vegetation (i.e., trees, shrubs) that will need to be removed within the construction limits shall be removed between September 1st and March 1st (i.e., outside of the nesting season for yellow warbler and yellow-breasted chat) to ensure that active nest trees are not removed as a result of project construction activities. Vegetation removal activities shall be limited to ground-level cuttings and will not include root removal or other ground-disturbing activities, to avoid potential erosion and sedimentation. If all vegetation removal activities are completed between September 1st and March 1st, no pre-construction surveys would be required.

PB-5b: If vegetation removal cannot be accomplished between September 1st and March 1st, the BOR shall retain a qualified biologist to conduct a minimum of one survey (subsequent surveys would be separated by at least one week) for yellow warbler and yellow-breasted chat within a 500-foot radius around proposed construction limits. Active nests for each species that are located within 500 feet of construction activities shall be mapped, where practicable and feasible. If active nest trees are identified within the construction disturbance zone, they may only be removed prior to March 1st, or after the young have fledged (based on field verification). A qualified biologist shall monitor the nest to determine when the young have fledged and submit status reports to the CDFG throughout the nesting season. Nest tree removal shall only be performed in consultation with, and with pre-approval from the CDFG.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-6: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to northern spotted owl. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, no construction-related impacts to northern spotted owl would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Although suitable nesting, roosting, and foraging habitat for northern spotted owl is not located in the project study area, suitable dispersal habitat is located on the west side of the Poker Bar Bridges. Protocol-level surveys for northern spotted owl conducted in the project study area indicate that potentially suitable habitat in the project study area is not currently occupied by northern spotted owl.

As previously discussed, there are ten known occurrences of northern spotted owl within six miles of the project. Two of these nesting territories are located within the standard exclusionary zone (i.e., within 1.3 miles from a known spotted owl activity center or designated critical habitat) currently recommended to prevent adverse impacts to this species that may occur as a result of construction activities (D. Wineberg, BLM, and T. Quinn, STNF, personal communication, 2002). As no pile driving activity is proposed for this bridge replacement project; construction noise is anticipated to be minimal and is not likely to impact the northern spotted owl.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction-related impacts to northern spotted owl associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-7: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to little willow flycatcher. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, no construction-related impacts to little willow flycatcher would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Montane riparian (upland) habitat within the Poker Bar ESL provides suitable nesting and foraging habitat for little willow flycatcher, although no little willow flycatchers were observed during the 2002 field surveys. Though no nesting individuals have been observed near the project site, there is the potential for new nesting territories to become established within the Poker Bar ESL in subsequent nesting seasons, prior to the start of construction. Disturbance from traffic and equipment operation, and personnel activities during the breeding season (March-July) could result in nest failure or abandonment. There is also a potential for the direct loss of active or potential nest trees or shrubs during site preparation.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction-related impacts to little willow flycatcher associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

The following mitigation measures shall be implemented to avoid/minimize potential impacts to little willow flycatcher:

PB-7a: If construction is proposed between the months of April and August, a protocol-level survey for willow flycatchers within 500 feet of the construction limits shall be conducted during the spring prior to construction. If no active nests are observed, construction may proceed. If construction activities are to occur between September and March, no surveys would be required. A letter report that summarizes the survey results shall be submitted to the CDFG.

PB-7b: All vegetation (i.e., trees, shrubs) that will need to be removed within the construction limits (including the temporary construction access routes) shall be removed between September 1st and March 1st (i.e., outside the nesting season for willow flycatcher) to ensure that active nest trees are not removed as a result of project construction activities.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-8: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to BLM sensitive species and Northwest Forest Plan Survey and Manage species. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, no construction-related impacts to BLM sensitive species or Northwest Forest Plan Survey and Manage species would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

Federal lands are not present within the Poker Bar Bridges ESL; therefore, surveys for BLM sensitive and Survey and Manage species were not conducted at the Poker Bar site during 2002. Ten of the wildlife species with potential to occur within the Poker Bar study area (foothill yellow-legged frog, northwestern pond turtle, golden eagle, Pacific fisher, pale Townsend's big-eared bat, and small-footed myotis, long-eared myotis, fringed myotis, long-legged myotis, and Yuma myotis bats) are designated BLM Sensitive species. The implementation of mitigation measures PB-9, PB-10, PB-11, PB-13, and PB-14 (discussed later in this section), will reduce potential impacts to these species to a less than significant level.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction-related impacts to BLM sensitive species or Survey and Manage species associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-9: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to foothill yellow-legged frog. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, no construction-related impacts to foothill yellow-legged frog would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

The Poker Bar ESL provides suitable habitat for foothill yellow-legged frog, although the species was not observed during field surveys conducted in 2002. Construction activities associated with the Proposed Action, particularly activities associated with the construction of new bridge abutments and roadways, may impact foothill yellow-legged frogs directly and indirectly. Direct effects include mortality of individuals due to equipment and vehicle traffic, disturbance of boulders or cobbles that support egg masses, and the loss of riparian vegetation cover. The species may also be indirectly affected if construction activities result in degradation of aquatic habitat and water quality due to erosion and sedimentation, accidental fuel leaks, and spills. Construction activities associated with the Proposed Action could potentially result in significant adverse impacts to foothill yellow-legged frog and mitigation is required.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction-related impacts to foothill yellow-legged frog associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

PB-9a: If any construction within the Trinity River channel will occur prior to August 1st of any construction season, a pre-construction survey for yellow-legged frog larvae and/or eggs shall be conducted by a qualified biologist. This survey would need to be conducted within the construction limits no more than two weeks prior to the start of in-stream construction activities. If larvae or eggs are detected, the biologist shall relocate them to a suitable location outside of the construction limits.

PB-9b: In the event that a yellow-legged frog is observed within the construction limits, the contractor shall temporarily halt in-stream construction activities until the frog has been moved to a safe location outside of the construction limits, within similar habitat.

PB-9c: Mitigation measures presented in Section 3.5 (Water Quality) for addressing erosion and sedimentation and accidental spills shall be fully implemented to mitigate for the potential indirect impacts to potential dispersal habitat due to sedimentation and accidental spills.

PB-9d: Mitigation measures associated with the disturbance to riparian habitat are discussed previously in this section under impacts to jurisdictional wetlands (Mitigation Measure PB-3), and will be fully implemented.

Significance after Mitigation: *Less than Significant*

Impact 3.7-10: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to northwestern pond turtle. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, no construction-related impacts to northwestern pond turtle would occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

The Poker Bar ESL provides suitable habitat for northwestern pond turtle, although the species was not observed during the 2002 field surveys. Construction activities associated with the Proposed Action, particularly activities associated with construction of the new bridge abutments and roadway approaches, may impact pond turtles directly and indirectly. Direct effects include mortality of individuals due to equipment and vehicle traffic, disturbance to nests in upland areas, and the loss of riparian vegetation cover. The species may also be indirectly affected if construction activities result in degradation of aquatic habitat and water quality due to erosion and sedimentation, accidental fuel leaks, and spills. Construction activities associated with the Proposed Action could potentially result in significant adverse impacts to northwestern pond turtle and mitigation is required.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction-related impacts to northwestern pond turtle associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

PB-10a: A minimum of one survey for pond turtle nests shall be conducted a maximum of one week prior to construction. A qualified biologist shall be retained by the BOR to conduct the survey. If a pond turtle nest is found, the biologist shall flag the site and determine if construction activities can avoid impacting the nest. If the nest cannot be avoided, the nest should be excavated by the biologist and reburied at a suitable location outside of the construction limits.

PB-10b: In the event that a pond turtle is observed within the construction limits, the contractor shall temporarily halt in-stream construction activities until the turtle has been moved to a safe location outside of the construction limits, within similar habitat.

PB-10c: Mitigation measures presented in Section 3.5 (Water Quality) for addressing erosion and sedimentation and accidental spills shall be fully implemented to mitigate for the potential indirect impacts to potential dispersal habitat due to sedimentation and accidental spills.

PB-10d: Mitigation measures associated with the disturbance to riparian habitat are discussed previously in this section under impacts to jurisdictional wetlands (Mitigation Measure PB-3), and will be fully implemented.

Significance after Mitigation: *Less than Significant*

Impact 3.7-11: Construction activities associated with the proposed Trinity River Bridges Project could restrict terrestrial wildlife movement through the Project ESL. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, construction-related restriction of terrestrial wildlife movement through the Project ESL would not occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

The Trinity River corridor provides habitat and travel corridors for such species as California wolverine, American marten, Pacific fisher, black-tailed deer, river otter, beaver, common mergansers, green heron, black-crowned night heron, wood duck, belted kingfisher, cliff swallows, bank swallows and raccoons. The riparian vegetation along the Trinity River, in association with adjacent Klamath mixed conifer and montane hardwood-conifer habitat, provides connected habitat within an area that has been fragmented by rural residential development and road building. Black-tailed deer inhabit shrublands, forests, and oak woodlands and utilize riparian vegetation for cover.

Construction noise could temporarily alter foraging patterns of resident wildlife species, however, no long-term impediments to wildlife movement within the Project ESL are anticipated as a result of implementing the Proposed Action since the project site currently supports existing bridges and a roadway.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction-related impacts to terrestrial wildlife movement associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-12: Construction activities associated with the proposed Trinity River Bridges Project could disrupt active swallow nests. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, construction-related impacts to active swallow nests would not occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

The existing Poker Bar bridge structures are currently used as a nesting site by cliff swallows, but not by barn swallows, both of which are protected by the MBTA (CDFG Code Section 3513). In addition to the nesting individuals observed in 2002, there is the potential for new nests to become established under the existing structure in subsequent nesting seasons, prior to the start of construction. Any proposed construction activities associated with the underside of the bridge structure (i.e., bridge removal) during the nesting season (i.e., April-July) could destroy nests with young. This would be a significant impact.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction-related impacts to active swallow nests associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

If the current bridge structure is left undisturbed until after July 31st, then no additional mitigation is required. If construction activities involving the disturbance or removal of the existing bridge occur prior to July 31st of any given

construction season, the following mitigation shall be implemented to reduce potential impacts to nesting swallows to a less than significant level:

PB-12a: The BOR or its contractor shall remove all old swallow nests, if present, on the existing bridge structure prior to March 1st of the construction year. The old nests shall be removed by washing them down with water and/or knocking them down with poles and scrapers. Since swallows are strongly attracted to old nests or remnants of nests, all traces of mud should be removed. After all old nests have been removed, exclusionary netting with a diameter of ¾ inches or less (high-density, ultra-violet stabilized polyethylene twine) shall be installed on the underside of the existing bridge structure and extend 3 to 4 inches from the sides of the bridge so as to prevent swallows from gaining access.

PB-12b: While the contractor will have flexibility in how to install the exclusionary netting, the following methodology has been used with some recent success on large-scale bridge projects:

- Attach netting to the bridge with a strong cable system secure to the bridge with concrete anchors.
- If necessary, a separate cable support system may be used for each section between piers and panel of netting.
- Each net panel should wrap from the top ledge on the side of the bridge structure down to the top of the piers.
- The net should then go under the bridge structure and back up to the other side to the same location on the opposite rail.
- Turnbuckles and immediate fasteners should be placed within each separate panel to keep the netting tight against the wall.
- Care should be taken along the top railing where the netting is attached to prevent any tampering.

PB-12c: The netting shall be left in place until July 31st and monitored daily, especially during the onset of swallow nesting behavior when nest-building activities are the most intense. Any foundational nest material that may develop on either netting attached tightly to the bridge or on un-netted areas of the bridge (i.e., pier walls) shall be removed daily. Any deficiencies in the netting system (i.e., tears, unsecured areas) shall be repaired as soon as possible following observation. To avoid a take under the MBTA, nests shall be knocked down with poles or scrapers or washed off before they are 1/3 complete.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-13: Construction activities associated with the proposed Trinity River Bridges Project could result in the loss of bald eagle, golden eagle, and osprey foraging and perching habitat. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, construction-related impacts to bald eagle, golden eagle, and osprey nesting, foraging, and perching habitat would not occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

The Trinity River riparian corridor, including the Poker Bar ESL, provides both foraging and perching habitat for bald eagle, golden eagle, and osprey. Adjacent Klamath mixed-conifer and montane hardwood conifer habitat provides suitable nesting habitat for these species, although existing traffic noise disturbance in the project area would preclude

nesting by these species within the project vicinity. The nearest known bald eagle nesting site is a single occurrence located approximately 3.5 miles upstream on Lewiston Lake. No known golden eagle or osprey nests occur in the project area. Tree snags suitable for perching are located along the Trinity River. Construction activities associated with the Proposed Action could temporarily alter foraging patterns of these species; however, this would be considered less than significant based on the abundance of suitable foraging habitat in the vicinity of the project area. No long-term impediments to foraging habitat within the Salt Flat ESL are anticipated. The loss of potential perch trees would not affect the abundance of these species or their use of the Trinity River for foraging habitat.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction-related impacts to bald eagle, golden eagle, and osprey nesting, foraging, and perching habitat associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-14: Construction activities associated with the proposed Trinity River Bridges Project could result in the disruption of active bat roosts. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since the new bridges will not be constructed at the Poker Bar site, construction-related impacts to active bat roosts would not occur.

Proposed Action (Replacement Upstream with Two Single-Span Structures)

As previously discussed, special-status bat species with potential to occur in the project area include pale Townsend's big eared bat, small-footed myotis bat, long-eared myotis bat, fringed myotis bat, long-legged myotis, and Yuma myotis bat. Suitable roosting and foraging habitat for these species is present at the Poker Bar site, although the species were not detected in the Poker Bar ESL during the 2002 field surveys.

Construction activities associated with the Proposed Action may result in the temporary disruption of bat roosting habitat. The temporary loss of potential roosting habitat is not considered a significant impact since other potential roosting habitat is available within the project region. No permanent loss of bat roosting habitat would occur as a result of the proposed project.

Alternative 1 (Replacement Downstream with Two Single-Span Structures)

Construction-related impacts to active bat roosts associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Biggers Road Bridge

Impact 3.7-1: Construction activities associated with the proposed Trinity River Bridges Project would result in the loss of upland plant communities. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, no construction-related impacts to biological resources would occur.

Proposed Action (Replacement Upstream)

Table 3.7-11 indicates the total acreage of permanent and temporary impacts to upland plant communities as a result of constructing a new bridge upstream of the existing Biggers Road Bridge (the Proposed Action).

TABLE 3.7-11
EXPECTED AREA OF DISTURBANCE TO UPLAND PLANT COMMUNITIES WITHIN THE BIGGERS ROAD PROJECT STUDY AREA: PROPOSED ACTION AND PROJECT ALTERNATIVES

Upland Plant Community Type	Approximate Area of Disturbance (Acres)			
	Proposed Action		Alternative 1	
	Temporary	Permanent	Temporary	Permanent
Klamath Mixed Conifer	0.286	0.041	0.285	0.041
Montane Riparian[4] - Upland	0.078	0.015	0.144	0.031
Grass / Lawn / Road	0.618	0.014	0.795	0.014
Total	**0.982**	**0.07**	**1.224**	**0.086**

The permanent loss of 0.07 acres and temporary impact to 0.982 acre of upland habitat, including roads and lawns, is not considered significant due to the relative abundance of these upland plant community types in the project area.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Table 3.7-5 indicates the total acreage of permanent and temporary impacts to upland plant communities as a result of constructing a new bridge upstream of the existing Biggers Road Bridge and raising Steel Bridge Road (Alternative 1). The permanent loss of 0.086 acre and temporary impact to 1.224 acres of upland habitat, including

[4] In some instances, montane riparian habitat occurs in upland areas. This community type, while comprised of similar plant species as montane riparian wetlands, does not meet two of the three Corps criteria for being classified as a jurisdictional water (i.e., lacking hydrology and hydric soils indicators).

roads and lawns, is not considered significant due to the relative abundance of these upland plant community types in the project area.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-2: Construction of the Trinity River Bridges Project could result in the loss of individuals of a special-status plant species. ***No Impact for the No-Action Alternative, Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, no construction-related impacts to a special-status plant species would occur.

Proposed Action (Replacement Upstream)); Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

The entire Biggers Road Bridge ESL was surveyed for special-status plant species in 2002. No special-status plants were detected within the Biggers Road ESL.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-3: Construction activities associated with the proposed Trinity River Bridges Project could result in the loss of jurisdictional wetlands. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, no loss of jurisdictional wetlands would occur.

Proposed Action (Replacement Upstream))

A delineation of potential jurisdictional wetlands and other waters of the U.S. within the Biggers Road Bridge ESL (following the methodology identified in the 1987 Corps guidelines) was conducted by NSR on July 16-18, 2002, July 23-24, 2002, and March 3, 2003. A total of 1.74 acres of potential jurisdictional waters, comprised of 1.09 acres of riverine (other waters) and 0.65 acres of riparian wetland habitat, were mapped within the ESL. The Corps verified these acreages on March 25, 2003. **Table 3.7-12** lists wetland impacts for the Proposed Action and each project alternative.

Construction activities associated with the Proposed Action will result in both permanent and temporary effects to jurisdictional wetland features located within the Biggers Road ESL. Construction of the Proposed Action would

result in the permanent loss of 0.052 acre of riparian wetland, but would result in a net increase in riverine habitat since this alternative would result in two less piers being located within the Trinity River floodplain. Impacts to SRA habitat are analyzed in Section 3.6, Fishery Resources. Construction access and staging would temporarily disturb 0.176 acre of riparian wetland and 0.291 acre of riverine habitat. Both permanent and temporary impacts to jurisdictional wetlands would be considered significant.

TABLE 3.7-12
EXPECTED AREA OF DISTURBANCE TO JURISDICTIONAL WATERS WITHIN THE BIGGERS ROAD PROJECT STUDY AREA: PROPOSED ACTION AND PROJECT ALTERNATIVES

Wetland Type	Approximate Area of Disturbance (Acres)			
	Proposed Action		Alternative 1	
	Temporary	Permanent	Temporary	Permanent
Riparian Wetland (Montane Riparian)	0.176	0.052	0.188	0.052
Riverine	0.291	0.006	0.291	0.006
Total	**0.467**	**0.058**	**0.479**	**0.058**

Alternative 1 (Replacement Upstream, Private Ownership)

Construction activities associated with Alternative 1 will result in both permanent and temporary effects to jurisdictional wetland features located within the Biggers Road ESL. Project construction associated with Alternative 1 would result in a net increase in riverine habitat since this alternative would result in three less piers being located within the river floodplain. However, construction of the new bridge and retaining wall adjacent to the Trinity River would result in the permanent loss of 0.052 acre of riparian wetland and 0.006 acre of riverine habitat. Construction access and staging would temporarily disturb 0.188 acre of riparian wetland and 0.291 acre of riverine habitat. Both permanent and temporary impacts to jurisdictional wetlands would be considered significant.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

BR-3a: Prior to the start of construction activities, the BOR shall retain a qualified biologist to identify construction access routes within the project area to ensure that these features avoid and/or minimize to the fullest extent impacts to jurisdictional waters. In addition, jurisdictional waters shall be clearly identified in the construction drawings along with specific instructions to avoid any construction activity within these features. Each jurisdictional feature proposed to be avoided will be flagged, staked, or otherwise marked to ensure that construction activities do not encroach upon these features. The exclusionary fencing shall be inspected and maintained on a regular basis throughout the project construction phase.

BR-3b: To mitigate for a loss of jurisdictional waters habitat, specifically riparian wetland (montane riparian), the Project would be designed to avoid and minimize losses to wetland vegetation within the Project ESL to the fullest extent feasible. When loss of riparian wetland is unavoidable, the BOR will conduct mitigation

at a ratio of 3:1 per woody riparian plant species for habitat temporarily affected and permanently lost due to project construction activities.

BR-3c: For riparian wetland (montane riparian) habitat, following completion of construction activities, plantings shall be installed to replace all riparian trees and shrubs (by species) that were removed as a result of construction (temporary and permanent impacts). Replacement shall occur at a ratio of 3:1 per woody riparian species removed as a result of project construction activities. Replacement trees and shrubs should be planted in the appropriate season (i.e., spring or fall) following the completion of construction. Propagules (i.e., shrub cuttings, trees seedlings) shall be obtained either onsite or from a local nursery and planted along the Trinity River within the immediate Project ESL. Additional planting may need to occur at on off-site location depending on available opportunities for mitigation within and adjacent to the Project ESL. The BOR or their contractor shall monitor the plantings annually for up to five years to ensure that trees and shrubs have become established. Supplemental planting would be conducted, as necessary, to ensure that the performance standard is met. Once riparian wetlands mitigation has been successfully completed, the BOR shall submit a memorandum to the Corps, CDFG, and NMFS documenting the results. *Note: This measure may be conducted in conjunction with Measures BR-6a through BR-6d (Loss of Shaded Riverine Aquatic Habitat), as discussed in Section 3.6, Fishery Resources.*

Significance After Mitigation: *Less than Significant.*

Impact 3.7-4: Construction activities associated with the proposed Trinity River Bridges Project could disrupt active raptor nests. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, no construction-related impacts to active raptor nests would occur.

Proposed Action (Replacement Upstream)

Noise and visual disturbance associated with construction activities occurring during the nesting season (March through July) can disrupt nesting raptors that would lead to nest abandonment and nest failure. Raptor species such Cooper's hawk and sharp-shinned hawk which are designated as State species of concern, as well as red-tailed hawk, red-shouldered hawk, American kestrel, great horned owl, and barn owl are all known to occur and nest throughout the Trinity River corridor. Particular nesting habitat preferred by these species that is present within or adjacent to the Biggers Road ESL includes Klamath mixed conifer and montane riparian (upland) habitat.

Although the raptor species mentioned above are not afforded full protection under the ESA, it is considered unlawful to take, possess, or destroy the nest or eggs of any birds pursuant to Section 3503.5 of the Fish and Game Code of California and the MBTA (16 USC 703-711). As a result, any loss or disturbance to these nesting raptor species would be considered a significant impact.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Construction-related impacts to active raptor nests associated with Alternative 1 would be similar to the Proposed Action, although the potential for impacting these species is greater due to the removal of larger quantities of riparian habitat for retaining wall construction.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

BR-4a: All vegetation (i.e., trees, shrubs) that will need to be removed within the project construction limits shall be removed between September 1st and March 1st (i.e., outside the nesting season for raptor species) to ensure that active raptor nest trees are not removed as a result of project construction activities. Vegetation removal activities shall be limited to ground-level cuttings and should not result in root removal or other ground-disturbances to avoid the potential for erosion and sedimentation. If all vegetation removal has been completed between September 1st and March 1st, no pre-construction surveys would be required.

BR-4b: If vegetation removal cannot be accomplished between September 1st and March 1st, the BOR shall retain a qualified biologist to conduct a minimum of one survey (subsequent surveys would be separated by at least one week) for nesting raptors, including Cooper's hawk and sharp-shinned hawk, within a 500-foot radius around proposed construction activities. Active raptor nests located within 500 feet of construction activities shall be mapped, where practicable and feasible. If active nests are identified within the construction disturbance area, they may only be removed prior to March 1st, or after the young have fledged (based on field verification). A qualified biologist shall monitor the nest(s) to determine when the young have fledged and submit status reports to the CDFG, as appropriate, throughout the nesting season. Nest tree removal shall only be performed in consultation with, and with pre-approval from the CDFG.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-5: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to nesting individuals of yellow warbler and yellow-breasted chat. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, no construction-related impacts to nesting individuals of yellow warbler and yellow-breasted chat would occur.

Proposed Action (Replacement Upstream)

Potential nesting habitat for yellow warbler and yellow-breasted chat is present within the riparian habitat associated with the Trinity River corridor and suitable nesting habitat is found within the ESL. Both of these species are designated as Species of Special Concern by the CDFG. Yellow-breasted chats were observed at the Biggers Road site during the May 2002 survey. Even though no recorded nest sites for yellow warbler or yellow-breasted chat in the project vicinity were identified by the CNDDB (2002), there is potential for the two species to nest within the Project ESL based on available habitat. The proposed project would require the removal of adjacent riparian vegetation, and noise associated with construction activities also could disturb individuals nesting directly adjacent to the project site. These species are protected by both the MBTA (16 USC 703-711) and the California Fish and Game Code (Sections 3503 and 3513). Essentially, these regulatory provisions consider it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird species designated in the MBTA. As a result, any loss of or disturbance to a nesting yellow warbler or yellow-breasted chat nest would be considered significant.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Construction-related impacts to nesting individuals of yellow warbler and yellow-breasted chat associated with Alternative 1 would be similar to the Proposed Action, although the potential for impacting these species is greater due to the removal of larger quantities of riparian habitat for retaining wall construction. Any loss of or disturbance to a nesting yellow warbler or yellow-breasted chat nest would be considered significant.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

BR-5a: All vegetation (i.e., trees, shrubs) that will need to be removed within the construction limits shall be removed between September 1st and March 1st (i.e., outside of the nesting season for yellow warbler and yellow-breasted chat) to ensure that active nest trees are not removed as a result of project construction activities. Vegetation removal activities shall be limited to ground-level cuttings and will not include root removal or other ground-disturbing activities, to avoid potential erosion and sedimentation. If all vegetation removal activities are completed between September 1st and March 1st, no pre-construction surveys would be required.

BR-5b: If vegetation removal cannot be accomplished between September 1st and March 1st, the BOR shall retain a qualified biologist to conduct a minimum of one survey (subsequent surveys would be separated by at least one week) for yellow warbler and yellow-breasted chat within a 500-foot radius around proposed construction limits. Active nests for each species that are located within 500 feet of construction activities shall be mapped, where practicable and feasible. If active nest trees are identified within the construction disturbance zone, they may only be removed prior to March 1st, or after the young have fledged (based on field verification). A qualified biologist shall monitor the nest to determine when the young have fledged and submit status reports to the CDFG throughout the nesting season. Nest tree removal shall only be performed in consultation with, and with pre-approval from the CDFG.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-6: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to northern spotted owl. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, no construction-related impacts to northern spotted owl would occur.

Proposed Action (Replacement Upstream)

Although suitable nesting, roosting, and foraging habitat for northern spotted owl is not located in the project study area, suitable dispersal habitat is located on the southwest side of Biggers Road Bridge. Protocol-level surveys for northern spotted owl conducted in the project study area indicate that potentially suitable habitat in the project study area is not currently occupied by northern spotted owl.

As previously discussed, there are ten known occurrences of northern spotted owl within 2 to 6 miles of the project. Three of these nesting territories are located within the standard exclusionary zones (i.e., within 1.3 miles from a known spotted owl activity center or designated critical habitat) currently recommended to prevent adverse impacts to this species that may occur as a result of construction activities (D. Wineberg, BLM, and T. Quinn, STNF, personal communication, 2002). However, no pile driving activity is proposed for this bridge replacement project; therefore, construction noise is anticipated to be minimal and is not likely to impact the northern spotted owl.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Construction-related impacts to northern spotted owl associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-7: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to little willow flycatcher. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, no construction-related impacts to little willow flycatcher would occur.

Proposed Action (Replacement Upstream)

Montane riparian (upland) habitat within the Biggers Road ESL provides suitable nesting and foraging habitat for little willow flycatcher, although no little willow flycatchers were observed during the 2002 field surveys. Though no nesting individuals have been observed near the project site, there is the potential for new nesting territories to become established within the Biggers Road ESL in subsequent nesting seasons, prior to the start of construction. Disturbance from traffic and equipment operation, and personnel activities during the breeding season (March-July) could result in nest failure or abandonment. There is also a potential for the direct loss of active or potential nest trees or shrubs during site preparation. These impacts would be considered significant.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Construction-related impacts to little willow flycatcher associated with Alternative 1 would be similar to the Proposed Action, although the potential for impacting this species is greater due to the removal of larger quantities of riparian habitat for retaining wall construction. Disturbance from traffic and equipment operation, and personnel activities during the breeding season (March-July) could result in nest failure or abandonment. There is also a potential for the direct loss of active or potential nest trees or shrubs during site preparation. These impacts would be considered significant.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

The following mitigation measures shall be implemented to avoid/minimize potential impacts to little willow flycatcher:

BR-7a: If construction is proposed between the months of April and August, a protocol-level survey for willow flycatchers within 500 feet of the construction limits shall be conducted during the spring prior to construction. If no active nests are observed, construction may proceed. If construction activities are to occur between September and March, no surveys would be required. A letter report that summarizes the survey results shall be submitted to the CDFG.

BR-7b: All vegetation (i.e., trees, shrubs) that will need to be removed within the construction limits (including the temporary construction access routes) shall be removed between September 1st and March 1st (i.e., outside the nesting season for willow flycatcher) to ensure that active nest trees are not removed as a result of project construction activities.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-8: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to BLM sensitive species and Northwest Forest Plan Survey and Manage species. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, no construction-related impacts to BLM sensitive species or Northwest Forest Plan Survey and Manage species would occur.

Proposed Action (Replacement Upstream)

Federal lands are not present within the Biggers Road Bridge ESL; therefore, surveys for BLM sensitive and Survey and Manage species were not conducted at the Biggers Road site during 2002. Ten of the wildlife species with potential to occur within the Biggers Road study area (foothill yellow-legged frog, northwestern pond turtle, golden eagle, Pacific fisher, Pale Townsend's big-eared bat, and small-footed myotis, long-eared myotis, fringed myotis, long-legged myotis, and Yuma myotis bats) are designated BLM Sensitive species. The implementation of mitigation measures BR-9, BR-10, BR-11, BR-13, and BR-14 (discussed later in this section), will reduce potential impacts to these species to a less than significant level.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Construction-related impacts to BLM sensitive species or Survey and Manage species associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-9: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to foothill yellow-legged frog. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, no construction-related impacts to foothill yellow-legged frog would occur.

Proposed Action (Replacement Upstream)

The Biggers Road ESL provides suitable habitat for foothill yellow-legged frog, although the species was not observed during field surveys conducted in 2002. Construction activities associated with the Proposed Action, particularly activities associated with construction of the temporary working platform for pier construction and construction of the bridge pier and abutments, may impact foothill yellow-legged frogs directly and indirectly. Direct effects include mortality of individuals due to equipment and vehicle traffic, disturbance of boulders or cobbles that support egg masses, and the loss of riparian vegetation cover. The species may also be indirectly affected if construction activities result in degradation of aquatic habitat and water quality due to erosion and sedimentation, accidental fuel leaks, and spills. Construction activities associated with the Proposed Action could potentially result in significant adverse impacts to foothill yellow-legged frog and mitigation is required.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Construction-related impacts to foothill yellow-legged frog associated with Alternative 1 would be greater than the Proposed Action due to the roadway improvements associated with this alternative. Raising Steel Bridge Road necessitates construction of a retaining wall adjacent to the road, which will result in significant removal of and damage to riparian areas adjacent to the Trinity River. Additional roadway improvements under Alternative 1 increase the changes of adverse impacts to water quality, including erosion and sedimentation, accidental fuel leaks, and spills. Construction activities associated with Alternative 1 could potentially result in significant adverse impacts to foothill yellow-legged frog and mitigation is required.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

BR-9a: If any construction within the Trinity River channel will occur prior to August 1st of any construction season, a pre-construction survey for yellow-legged frog larvae and/or eggs shall be conducted by a qualified biologist. This survey would need to be conducted within the construction limits no more than two weeks prior to the start of in-stream construction activities. If larvae or eggs are detected, the biologist shall relocate them to a suitable location outside of the construction limits.

BR-9b: In the event that a yellow-legged frog is observed within the construction limits, the contractor shall temporarily halt in-stream construction activities until the frog has been moved to a safe location outside of the construction limits, within similar habitat.

BR-9c: Mitigation measures presented in Section 3.5 (Water Quality) for addressing erosion and sedimentation and accidental spills shall be fully implemented to mitigate for the potential indirect impacts to potential dispersal habitat due to sedimentation and accidental spills.

BR-9d: Mitigation measures associated with the disturbance to riparian habitat are discussed previously in this section under impacts to jurisdictional wetlands (Mitigation Measure BR-3), and will be fully implemented.

Significance after Mitigation: *Less than Significant*

Impact 3.7-10: Construction activities associated with the proposed Trinity River Bridges Project could result in impacts to northwestern pond turtle. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, no construction-related impacts to northwestern pond turtle would occur.

Proposed Action (Replacement Upstream)

The Biggers Road ESL provides suitable habitat for northwestern pond turtle, although the species was not observed during the 2002 field surveys. Construction activities associated with the Proposed Action, particularly activities associated with the placement of the temporary working platforms and construction of the new bridge abutments and piers, may impact pond turtles directly and indirectly. Direct effects include mortality of individuals due to equipment and vehicle traffic, disturbance to nests in upland areas, and the loss of riparian vegetation cover. The species may also be indirectly affected if construction activities result in degradation of aquatic habitat and water quality due to erosion and sedimentation, accidental fuel leaks, and spills. Construction activities associated with the Proposed Action could potentially result in significant adverse impacts to northwestern pond turtle and mitigation is required.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Construction-related impacts to northwestern pond turtle associated with Alternative 1 would be greater than the Proposed Action due to the roadway improvements associated with this alternative. Raising Steel Bridge Road necessitates construction of a retaining wall adjacent to the road, which will result in significant removal of and damage to riparian areas adjacent to the Trinity River. Additional roadway improvements under Alternative 1 increase the changes of adverse impacts to water quality, including erosion and sedimentation, accidental fuel leaks,

and spills. Construction activities associated with Alternative 1 could potentially result in significant adverse impacts to northwestern pond turtle and mitigation is required.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

BR-10a: A minimum of one survey for pond turtle nests shall be conducted a maximum of one week prior to construction. A qualified biologist shall be retained by the BOR to conduct the survey. If a pond turtle nest is found, the biologist shall flag the site and determine if construction activities can avoid impacting the nest. If the nest cannot be avoided, the nest should be excavated by the biologist and reburied at a suitable location outside of the construction limits.

BR-10b: In the event that a pond turtle is observed within the construction limits, the contractor shall temporarily halt in-stream construction activities until the turtle has been moved to a safe location outside of the construction limits, within similar habitat.

BR-10c: Mitigation measures presented in Section 3.5 (Water Quality) for addressing erosion and sedimentation and accidental spills shall be fully implemented to mitigate for the potential indirect impacts to potential dispersal habitat due to sedimentation and accidental spills.

BR-10d: Mitigation measures associated with the disturbance to riparian habitat are discussed previously in this section under impacts to jurisdictional wetlands (Mitigation Measure BR-3), and will be fully implemented.

Significance after Mitigation: *Less than Significant*

Impact 3.7-11: Construction activities associated with the proposed Trinity River Bridges Project could restrict terrestrial wildlife movement through the Project ESL. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, construction-related restriction of terrestrial wildlife movement through the Project ESL would not occur.

Proposed Action (Replacement Upstream)

The Trinity River corridor provides habitat and travel corridors for such species as California wolverine, American marten, Pacific fisher, black-tailed deer, river otter, beaver, common mergansers, green heron, black-crowned night heron, wood duck, belted kingfisher, cliff swallows, bank swallows and raccoons. The riparian vegetation along the Trinity River, in association with adjacent Klamath mixed conifer and montane hardwood-conifer habitat, provides connected habitat within an area that has been fragmented by rural residential development and road building. Black-tailed deer inhabit shrublands, forests, and oak woodlands and utilize riparian vegetation for cover. Construction noise could temporarily alter foraging patterns of resident wildlife species, however, no long-term

impediments to wildlife movement within the Project ESL are anticipated as a result of implementing the Proposed Action since the project site currently supports an existing bridge and roadway.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Construction-related impacts to terrestrial wildlife movement associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-12: Construction activities associated with the proposed Trinity River Bridges Project could disrupt active swallow nests. ***No Impact for the No-Action Alternative; Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, construction-related impacts to active swallow nests would not occur.

Proposed Action (Replacement Upstream)

The existing Biggers Road bridge structure is not currently used as a nesting site by cliff swallows or barn swallows, which are protected by the MBTA (CDFG Code Section 3513). Though no nesting individuals were observed in 2002, there is the potential for new nests to become established under the existing structure in subsequent nesting seasons, prior to the start of construction. Any proposed construction activities associated with the underside of the bridge structure (i.e., deck replacement and bridge removal) during the nesting season (i.e., April-July) could destroy nests with young. This would be a significant impact.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Construction-related impacts to active swallow nests associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative

Since no significant impact was identified, no mitigation is required.

Significance after Mitigation: N/A.

Proposed Action; Alternative 1

If the current bridge structure is left undisturbed until after July 31st, then no additional mitigation is required. If construction activities involving the disturbance or removal of the existing bridge occur prior to July 31st of any given

construction season, the following mitigation shall be implemented to reduce potential impacts to nesting swallows to a less than significant level:

BR-12a: The BOR or its contractor shall remove all old swallow nests, if present, on the existing bridge structure prior to March 1st of the construction year. The old nests shall be removed by washing them down with water and/or knocking them down with poles and scrapers. Since swallows are strongly attracted to old nests or remnants of nests, all traces of mud should be removed. After all old nests have been removed, exclusionary netting with a diameter of ¾ inches or less (high-density, ultra-violet stabilized polyethylene twine) shall be installed on the underside of the existing bridge structure and extend 3 to 4 inches from the sides of the bridge so as to prevent swallows from gaining access.

BR-12b: While the contractor will have flexibility in how to install the exclusionary netting, the following methodology has been used with some recent success on large-scale bridge projects:

- Attach netting to the bridge with a strong cable system secure to the bridge with concrete anchors.
- If necessary, a separate cable support system may be used for each section between piers and panel of netting.
- Each net panel should wrap from the top ledge on the side of the bridge structure down to the top of the piers.
- The net should then go under the bridge structure and back up to the other side to the same location on the opposite rail.
- Turnbuckles and immediate fasteners should be placed within each separate panel to keep the netting tight against the wall.
- Care should be taken along the top railing where the netting is attached to prevent any tampering.

BR-12c: The netting shall be left in place until July 31st and monitored daily, especially during the onset of swallow nesting behavior when nest-building activities are the most intense. Any foundational nest material that may develop on either netting attached tightly to the bridge or on un-netted areas of the bridge (i.e., pier walls) shall be removed daily. Any deficiencies in the netting system (i.e., tears, unsecured areas) shall be repaired as soon as possible following observation. To avoid a take under the MBTA, nests shall be knocked down with poles or scrapers or washed off before they are 1/3 complete.

Significance After Mitigation: *Less than Significant.*

Impact 3.7-13: Construction activities associated with the proposed Trinity River Bridges Project could result in the loss of bald eagle, golden eagle, and osprey foraging and perching habitat. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, construction-related impacts to bald eagle, golden eagle, and osprey nesting, foraging, and perching habitat would not occur.

Proposed Action (Replacement Upstream)

The Trinity River riparian corridor, including the Biggers Road ESL, provides both foraging and perching habitat for bald eagle, golden eagle, and osprey. Adjacent Klamath mixed-conifer and montane hardwood conifer habitat provides suitable nesting habitat for all three species, although existing traffic noise disturbance in the project area

would preclude nesting by these species within the project vicinity. The nearest known bald eagle nesting site is a single occurrence located approximately 5 miles upstream on Lewiston Lake. No known golden eagle or osprey nests occur in the project area. Tree snags suitable for perching are located along the Trinity River. Construction activities associated with the Proposed Action could temporarily alter foraging patterns of these species; however, this would be considered less than significant based on the abundance of suitable foraging habitat in the vicinity of the project area. No long-term impediments to foraging habitat within the Biggers Road ESL are anticipated. The loss of potential perch trees would not affect the abundance of these species or their use of the Trinity River for foraging habitat.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Construction-related impacts to bald eagle, golden eagle, and osprey nesting, foraging, and perching habitat associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

Impact 3.7-14: Construction activities associated with the proposed Trinity River Bridges Project could result in the disruption of active bat roosts. ***No Impact for the No-Action Alternative; Less than Significant Impact for the Proposed Action and Alternative 1.***

No-Action Alternative

Under the No-Action Alternative, since a new bridge would not be constructed at the Biggers Road site, construction-related impacts to active bat roosts would not occur.

Proposed Action (Replacement Upstream)

As previously discussed, special-status bat species with potential to occur in the project area include pale Townsend's big eared bat, small-footed myotis bat, long-eared myotis bat, fringed myotis bat, long-legged myotis, and Yuma myotis bat. Suitable roosting and foraging habitat for these species is present at the Biggers Road site, although the species were not detected in the Biggers Road ESL during the 2002 field surveys.

Construction activities associated with the Proposed Action may result in the temporary disruption of bat roosting habitat. The temporary loss of potential roosting habitat is not considered a significant impact since other potential roosting habitat is available within the project region. No permanent loss of bat roosting habitat would occur as a result of the proposed project.

Alternative 1 (Replacement Upstream, Raise Steel Bridge Road)

Construction-related impacts to active bat roosts associated with Alternative 1 would be similar to the Proposed Action.

Mitigation Measures

No-Action Alternative; Proposed Action; Alternative 1

Since no significant impact was identified for these alternatives, no mitigation is required.

Significance after Mitigation: N/A.

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